The Laws Guide to Drawing Birds

Written and Illustrated by John Muir Laws
Foreword by David Allen Sibley

HEYDAY, BERKELEY, CALIFORNIA

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Hartley and Mary Lou Cravens, Christine and J. Brooks Crawford, M.D., Michael McCone, and Robert and Rosemary E

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DERWENT • SKETCHING
Medium Mark #2
ENGLAND

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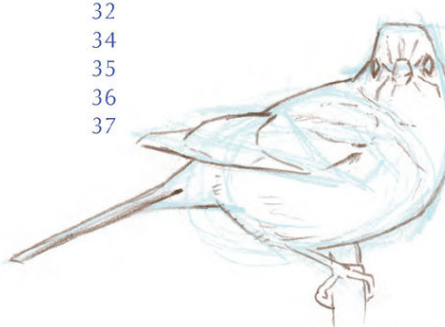

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ACKNOWLEDGMENTS

I owe this book, and the art and scholarship reflected in it, to the mentors, teacher and companions who supported, inspired, and trained me to do what I love.

My parents instilled in me a deep love of nature. My mother, Beatrice Challiss Laws, loves hiking and identifying wildflowers and my father, Robert Laws, is an enthusiastic birder. Nature study was not pushed on me but was a regular part of how we explored together. My parents paid attention to what interested my brother and me and encouraged us to follow those interests. My brother, James Laws, draws constantly on his travels and his self-published journals of his adventures helped open the door for my own bookmaking. I am also grateful for the encouragement, support, love, photography, and editing of my dear wife, Cybèle Renault.

I was diagnosed with dyslexia at an early age. Though I could catch on quickly to some new subjects, other basic academic skills languished. Try as I might, I could not spell or get my letters to point the right way, and I reversed numbers as easily as I did letters. Despite the support of family, my confidence in my own intelligence and academic ability drained away. By the time I reached high school I was floundering and a behavior problem. I was pulled from this tailspin by two teachers, Alan Ridley and Leroy Votto at the Urban School of San Francisco, who respected my thoughts over my spelling. Alan, the birdwatching biology teacher, also encouraged my scientific curiosity.

When I left for college, I was reenergized and understood my learning disability was not about intelligence; instead, it was about mechanics that could be overcome with work and modified study skills. At the University of California, Berkeley, I studied under Dr. Arnold Schultz, who helped me merge my creativity and interest in science. I also met Dr. Scott Stine, who told me to find what it is that I truly love and throw myself into it without fear, and that my career would grow from those seeds. I took his advice and trust he was right.

My first art teacher was my grandmother, Beatrice Challiss. She gave me the best art advice I have ever received. "Don't worry about making it perfect. Have fun with it, play with your colors and enjoy it." She hung each new picture on her kitchen wall and made me feel special. This encouragement helped keep me drawing, and as a result, my skill improved. When I was a teenager I took a weekend seminar on drawing birds from Keith Hansen. This class revolutionized the way that I drew and remains the basis for my approach to bird drawing. Keith has continued to inspire and advise me as I have developed as an artist. In 2001, I was accepted into the Scientific Illustration program at the University Santa Cruz. The instructors, Ann Caudle, Jenny Ke Lavendel, sharpened my skills and gave me the cor the work I do today.

I learn a tremendous amount from the drawings o When I find an inspiring drawing or painting, I stu sometimes copying it as best as I am able, line for l for stroke. When I draw this way I feel as if the other room with me, looking over my shoulder and teach and techniques. I have been particularly inspired b John Busby, Lars Jonsson, Lawrence McQueen, Darr Brockie, Hannah Hinchman, David Bennett, Chris Kaspari, Peter Partington, David Sibley, John Gale Keith Hansen, Barry van Dusen, Bruce Pearson, John Tim Wootton. I also study the drawings of the late Louis Agassiz Fuertes, and William Berry, from learned much about nature and drawing.

I also have been inspired by great naturalists who me to look more carefully at the world, to ask ques attention. Outstanding birders such as Jon Dunn Rich Stallcup, and Peter Pyle have helped me learn carefully and see more from encounters with wild b my greatest mentors have been well-rounded ecolo school natural historians. I am grateful to have had th to spend time in the field with David Lukas and Kur and Dr. Carl Sharsmith.While I was earning a mas wildlife biology at the University of Montana, my John Kelley, Dr. Kenneth Dial, Dr. Daniel Pletscher, advisor, Dr. Erick Greene, helped me bring greate nature study.

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Ann Caudle also helped me edit and revise this text. Special thanks to Bruce MacEvoy of Handprint.com for reviewing the color theory and watercolor section. I am deeply honored to have been advised by some of the best bird artists on the planet, who helped me revise and improve this book. I would especially like to thank the great bird artists David Sibley, John Schmitt, Lawrence McQueen, John Busby, Bruce Pearson, Keith Hansen, John Gale, Robert Petty, Ian Lewington, and Nick Derry for their encouragement, extensive notes, and suggested revisions.

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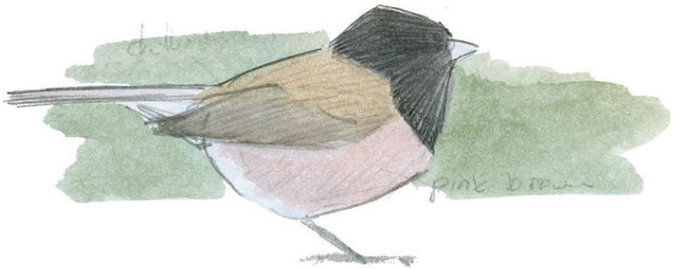
My ability to make this book is the result of t opportunities that I have been given, education, th of great people, and the support of loving friends an artistic style and approach to drawing are inspired by many. It is in thanks to this community that I prese which I hope will be of help to you in your discovery of and art. It is also my hope that through this deeper co will be inspired to greater stewardship of the natural w



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Handprint.com

FOREWORD

I have been drawing birds for most of my life. I started almost as soon as I could hold a pencil, around five years old, and I kept at it. Birds have always been my favorite subject and have provided me with a lifetime of challenging and stimulating work.

My father is an ornithologist, so there was no shortage of technical information about birds in our house. Finding instruction on drawing birds was more of a challenge. I watched birds constantly, I studied museum specimens and worked in bird-banding stations where I could hold the birds in my hand, and I sketched them whenever I could. I studied the work of other artists. I took lessons and read books about drawing in general, and I had a short picture book written and illustrated by Lynn Bogue Hunt called *How to Draw and Paint Birds* (published by Walter Foster). That book was big on demonstrations—showing Ms. Hunt's nicely styled sketches—but short on instruction. It didn't offer much more than the self-evident "Try to draw something that looks like this."

Slowly, over years of study and practice, I learned various tricks and details that made my drawings better. I learned about bird anatomy: how the feathers radiate from the base of the bill (page 22 in this book); how the tail pivots from a point far forward of where you would expect (page 37); how the feathers meet to form a crease down the center of the belly (page 24); how the feathers move as a bird "stretches" its neck (page 7). I learned about creating the illusion of form in two dimensions by making the darkest shadows away from the very edge of the bird (page 90), or merely suggesting the arrangement of feathers by outlining a few of them (page 35), and more.

People often ask me if my passion for drawing came first or my interest in watching birds. I have always done both. For me the two are intertwined and mutually supportive in ways that I can't even begin to describe. Since drawing is one of the things I do, whenever I watch birds I am thinking about details of drawing them. I notice the line of the back, the way the bill opens, the interaction of colors and form.

Conversely, when I am drawing I look more clo
answer questions that I would not have conside
watching. In that sense, drawing becomes a way to
birds, and drawing leads to understanding. The sin
to draw something can change the way you look a
that brings me to the underlying message of this b
my favorite things about it: Drawing birds is abou
than just drawing birds.

Drawing is often misunderstood. Non-artists t
the end result, and think that the primary purpo
to produce pretty pictures. For one thing, as this
that's a stress-inducing way to think about the pra
since by that measure most of your drawings will
importantly, it misses the deeper and longer-la
drawing—the knowledge and understanding that
process.

This book is superficially about drawing and pa
it's really a guide to a more thoughtful and inq
birds, with drawing as the method. As John Muir
introduction, "Every drawing is practice for the ne
your goal to learn to observe more closely and to rem
have seen. With these goals, every drawing will be

I wish this book had been available to me when I
because it is filled with tips and tricks that took me
It is detailed and thorough enough to be helpful t
artist, but the explanations are so clear and intuit
so encouraging, that it should be truly empoweri
Browse this book, try a few drawings, observe, br
Don't worry about how your drawings look; with
guide I guarantee they will get better. Just enjoy th
comes from engaging your curiosity about birds, an
of learning.

David Allen S
Concord, Mas

page 22
page 37
page 24
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Conversely, when I am drawing I look more closely and ask and answer ques act of trying to draw something can change the way you look at the world. A

Drawing is often misunderstood. Non-artists tend to focus on the end result, drawing, since by that measure most of your drawings will be failures. More

This book is superficially about drawing and painting birds, but it's really a g make it your goal to learn to observe more closely and to remember what yo

I wish this book had been available to me when I was starting out, because it intuitive, and the text so encouraging, that it should be truly empowering for get better. Just enjoy the excitement that comes from engaging your curiosity

David Allen Sibley Concord, Massachusetts

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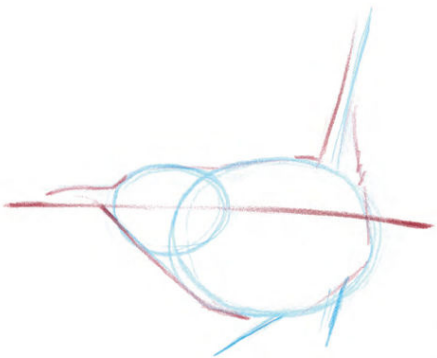
Bird Drawing Basics

To get you started, we are going to take a close look at drawing songbirds and c
system to quickly get the essential form on paper. This is not a rigid formula to ap
of your drawings, but a flexible framework that you can adapt and modify. Cor
fundamentals shown here as you develop your own style.



Bird

Drawing Basics

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THE JOY OF DRAWING BIRDS

Birds are wonders of flight, beauty, song, and delightful behavior. Drawing th invitation to look more deeply at the world around you and will pull you into c The practice of sketching birds will improve your drawing skill and your ability t and identify what you see. The greatest reward is not the product or actual draw the process itself. Drawing birds opens you to the beauty of the world.

BEYOND ART

Because birds can escape to the safety of the air, they can afford to expose themselves in open places, singing and wrapped in brilliant feathers. You can easily observe all aspects of their lives and behavior. Watching birds is a window into wildness. Birds are fiercely alive, simultaneously vulnerable and resilient. Study them to quiet your mind. As you grow in patient observation, the world will open and you will be changed forever. The greatest rewards from drawing birds come from opening ourselves to the beauty that is around us every day. The more that you draw, the more you will see and remember. Drawing helps us to look again and again until we discover new subtlety and wonder in the familiar.

> Let me keep my mind on what matters,
> which is my work
> which is mostly standing still and
> learning to be astonished.
>
> —Mary Oliver

We assume that if we can see, we know how to observe. But true observation is a skill that we must practice and learn. The deeper we look, the more the miracle of being alive opens to our eyes. Every drawing is an investigation and an opportunity to see more details of the world. Drawing makes you look again and again, even at the things that you think you already know. From this exercise, you will discover incredible things about the world around you. The best learning does not come from books. It comes from your own experience. Drawing reinforces the sort of gestalt observations that advanced birders use to identify birds from fleeting glimpses and in poor light.

Another gift of drawing is that you will vividly remember what you have seen. Your brain erases memories that it does not consider vital to your survival. Lost in this are many beautiful and vivid experiences. The reinforcement of drawing locks experiences into your memory.

GIVE YOURSELF PERMISSION TO DRAW

You can do this. Right now, make a resolution to throw yourself into drawing birds for the next year. Let it become a joyful obsession. You will discover that the world opens up to you in ways th never have predicted.

There is a powerful myth that drawing is an innat some are lucky enough to be born with, while others the gift. This is utterly false. You are no more a born chef or mechanic. Drawing is a skill that you develop b you draw regularly, then you will be able to draw, not t around. Many of us remember discouraging words, p childhoods, that made us stop drawing, and we have n a pencil since. It is difficult to start again as an adult fragile egos do not give us room to make mistakes and t at which we are not already good.

Every drawing is practice for the next one. The more more you reinforce the neurological pathways betwe brain, and hand. The greatest secret to drawing well is of pictures. Skill is simply a factor of time spent with p Make yourself draw regularly for one year. At the end o will not recognize your work from when you started.

If your goal is to make pretty pictures, then every ti does not work out the way you wanted, you will be and then less likely to pick up your pencil the next t make it your goal to learn to observe more closely and what you have seen. With these goals, every drawing wi and you will keep drawing. As an artifact of making n your ability to draw will grow naturally. The single mo thing you can do to improve your art is draw more improvement never ends. Draw to observe the world a learn from your observations, and to remember.

Developing any new skill requires practice. The mo thing is to push yourself to draw on a regular ba drawing a bird a day. Where can you fit it into your r a sketchbook with you and draw all the time. The mo the more you develop the neural pathways you are usi pathways become well-worn roads, it will become e what you see.

As you work, you will progress in a series of break plateaus. The more that you draw, the shorter the pla

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As you work, you will progress in a series of breakthroughs and plateaus. Th

progress, you will pass through periods when your drawings come easily and periods when you feel stymied and sense that your drawings just aren't working. This frustration is a part of the process. It comes just before the next breakthrough because you can see where you want your art to go but you are not there yet. In order to jump to the next level you need to see where you are going first, so welcome these bouts of frustration. Keep drawing and ask yourself, "What is it going to be like when I get to the next step?" A few sketches later you will be drawing at a new level.

COMMUNITY AND STEWARDSHIP

Goethe said a joy shared is a joy doubled. Seek out other people who watch birds at a sketcher's pace. Explore and draw together in the field. Encourage each other and share your observations and techniques. Avoid competition and you will all grow together. Our lives may be busy but if you schedule weekly or monthly drawing trips together, it will become a part of your routine. We often excuse ourselves from our adventures outdoors by saying, "I do not have time." May I suggest that you don't have time not to do it? Being awake and outside is one of the most important and pleasurable things we can do in our short lives.

Your relationship with birds and nature will deepen even more if you accept the role of stewardship. Stand up for and protect what you love. Join a local chapter of the Audubon Society or a group working with conservation or nature education in your area. Connect with this strong community and become a voice for the conservation and protection of nature.

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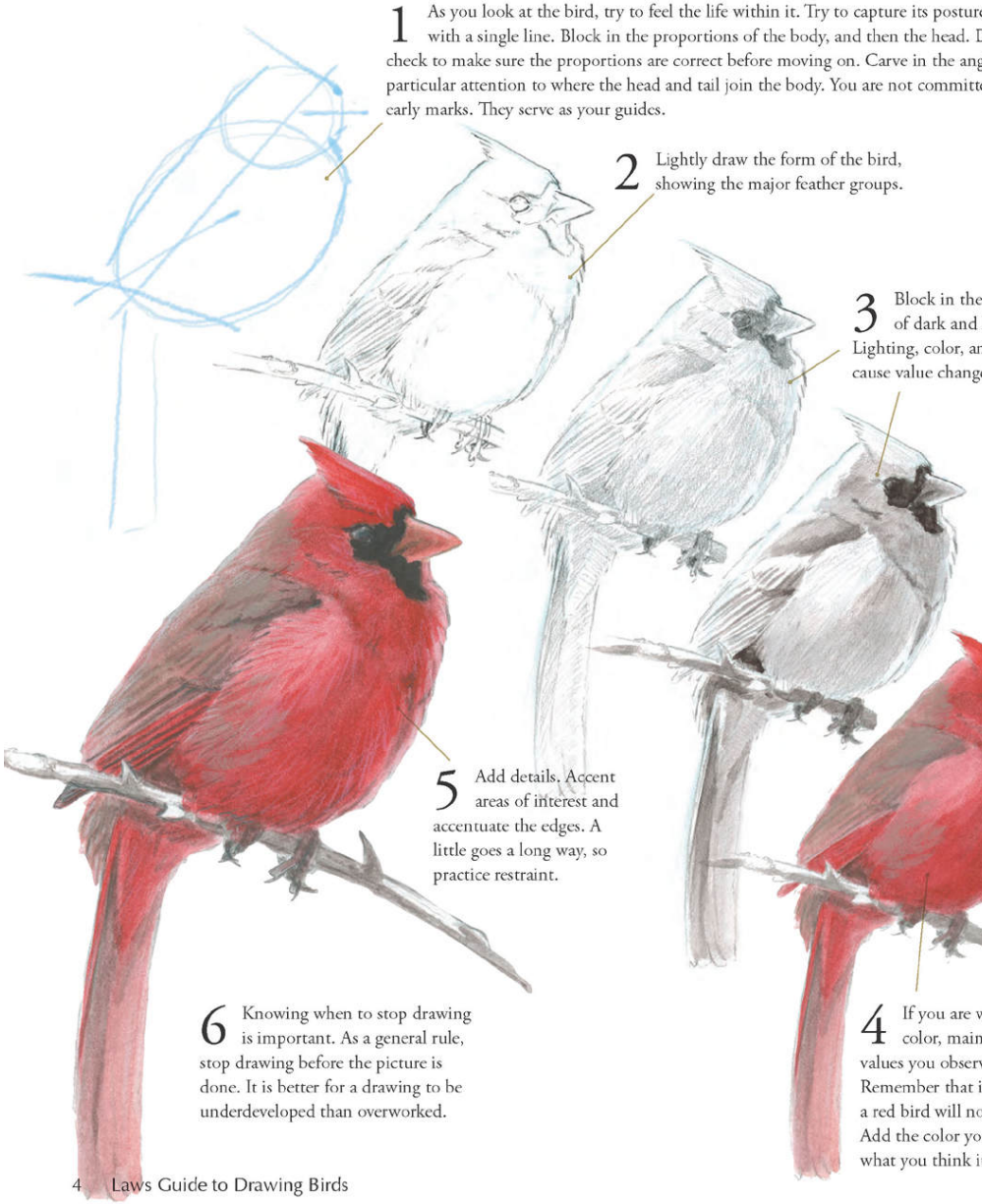
DRAW A BIRD IN SIX STEPS

Start with the big picture. Posture, proportion, and angles create the silhouette of
Dark and light values convey its solidity and lighting conditions. Add a little det
end, and stop before you overwork it.



1 As you look at the bird, try to feel the life within it. Try to capture its posture with a single line. Block in the proportions of the body, and then the head. D check to make sure the proportions are correct before moving on. Carve in the ang particular attention to where the head and tail join the body. You are not committe early marks. They serve as your guides.

2 Lightly draw the form of the bird, showing the major feather groups.

3 Block in the of dark and Lighting, color, ar cause value chang

4 If you are w color, main values you obser Remember that i a red bird will no Add the color yo what you think i

5 Add details. Accent areas of interest and accentuate the edges. A little goes a long way, so practice restraint.

6 Knowing when to stop drawing is important. As a general rule, stop drawing before the picture is done. It is better for a drawing to be underdeveloped than overworked.

DRAW A BIRD IN SIX STEPS

Start with the big picture. Posture, proportion, and angles create the silhouet

As you look at the bird, try to feel the life within it. Try to capture its postur
angles, paying particular attention to where the head and tail join the body.

1

2

Lightly draw the form of the bird, showing the major feather groups.

Block in the major areas of dark and light values.

Lighting, color, and pattern all cause value changes.

3

Add details. Accent areas of interest and accentuate the edges. A little goes a

5

Knowing when to stop drawing is important. As a general rule, stop drawing

6

4

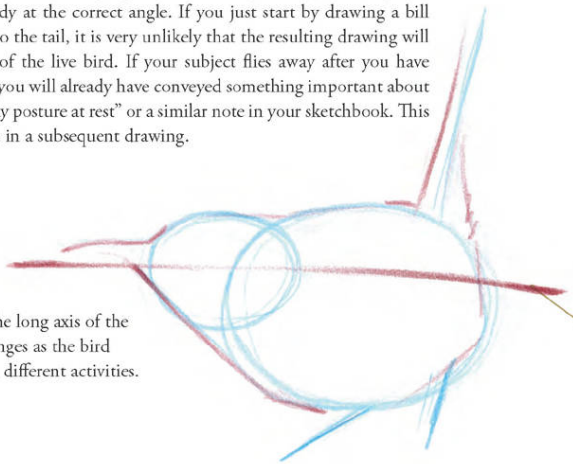
If you are working with color, maintain the values you observed in step 3. R

4 Laws Guide to Drawing Birds

POSTURE, THE FIRST LINE

Your bird drawing starts to fly from the first line. Start by capturing the angle of t

Think of the first line as a suggestion of the life energy of the bird. Observe the bird carefully, asking yourself, "What is it doing? What is the energy of this bird?" Birds rest at characteristic angles: Scrub Jays sit vertically, while a shrike or kingbird will often sit at a 40° angle. Postures change as birds perform different behaviors, or as they face into the wind. Begin by drawing a faint line that indicates the angle of the head and body. You will build the drawing around this line. If your drawing starts with a proper indication of posture, your completed bird will hold its body at the correct angle. If you just start by drawing a bill and work your way to the tail, it is very unlikely that the resulting drawing will convey the attitude of the live bird. If your subject flies away after you have drawn this first line, you will already have conveyed something important about the subject. Write "jay posture at rest" or a similar note in your sketchbook. This may be useful to you in a subsequent drawing.



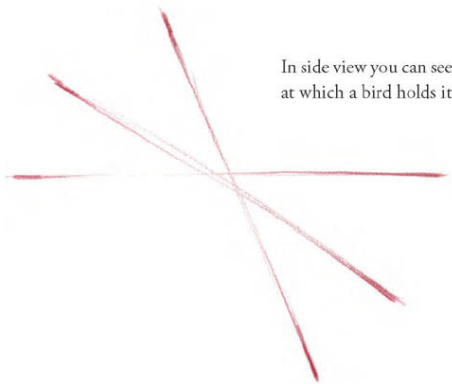
Posture (the long axis of the body) changes as the bird engages in different activities.

Capturing the long axis of the body is t first step in drawing bird. You will const the rest of the drawi around this line.

The posture of a bird t facing you is vertical.

Your first line will determine the action, energy, and balance of the bird. Draw it lightly and loosely. Double-check to make sure it is well observed and recorded before continuing.

In a 3/4 view, a bird's posture will appear steeper than it does from the side.



In side view you can see the true angle at which a bird holds its body.

POSTURE, THE FIRST LINE

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Posture (the long axis of the body) changes as the bird engages in different a

Your first line will determine the action, energy, and balance of the bird. Dra

Capturing the long axis of the body is the first step in drawing a bird. You w

The posture of a bird that is facing you is vertical.

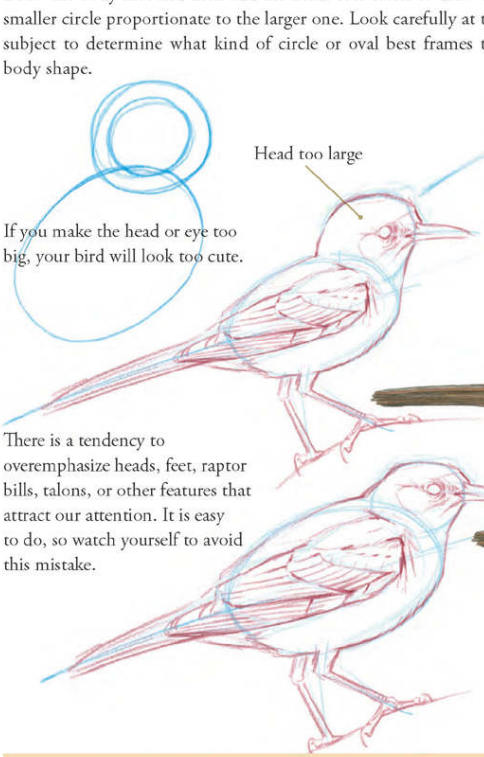
In a 3/4 view, a bird's posture will appear steeper than it does from the side.

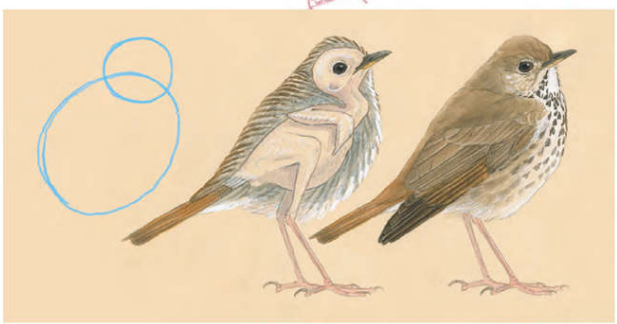
In side view you can see the true angle at which a bird holds its body.

PROPORTION

Proportions change within a species as a bird fluffs its feathers and between spec different-sized bodies. Generally, smaller birds will have proportionately larger h

Simplify the bird to an oval for the body and a circle for the head. Draw the body first and then add the head. It is easier to draw the smaller circle proportionate to the larger one. Look carefully at the subject to determine what kind of circle or oval best frames the body shape.


Head too large
If you make the head or eye too big, your bird will look too cute.
There is a tendency to overemphasize heads, feet, raptor bills, talons, or other features that attract our attention. It is easy to do, so watch yourself to avoid this mistake.



The oval and circle reflect the underlying form of the bird's body as insulated with feathers. The flexible neck can move the head circle up, down, forward, and backward.

These are the relative proportions of a shrike, chickadee drawn so that the body sizes are the same. Compare th

Birds fluff their feathers in cold, when preening, or in dis control the feathers and can to capture more warmth or s against the body. A bird can change size and proportions as it. When you draw proportions only drawing that species but th bird at that moment.

PROPORTION

Proportions change within a species as a bird fluffs its feathers and between

Simplify the bird to an oval for the body and a circle for the head. Draw the
frames the body shape.

These are the relative proportions of a shrike, chickadee, and magpie drawn

If you make the head or eye too big, your bird will look too cute.

Head too large

What shape circle or oval best describes the bird you are drawing? There is n

“one size fits all.”

There is a tendency to overemphasize heads, feet, raptor bills, talons, or othe

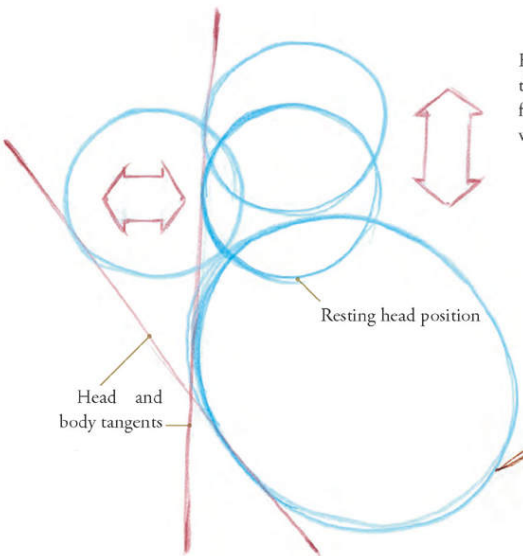
The oval and circle reflect the underlying form of the bird’s body as insulated

Birds fluff their feathers in response to cold, when preening, or in display. M
it. When you draw proportions, you are not only drawing that species but th

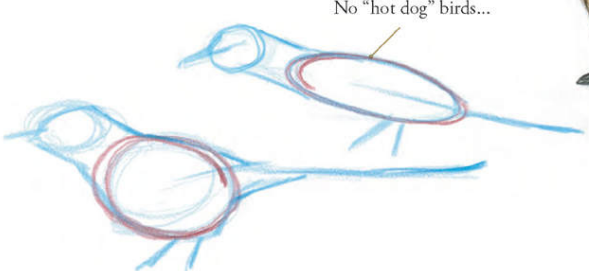
HEAD POSITION

The head and the body are relatively fixed skeletal structures, but the neck that them is extremely flexible. Head position will dramatically change the shape of Place the head with care.

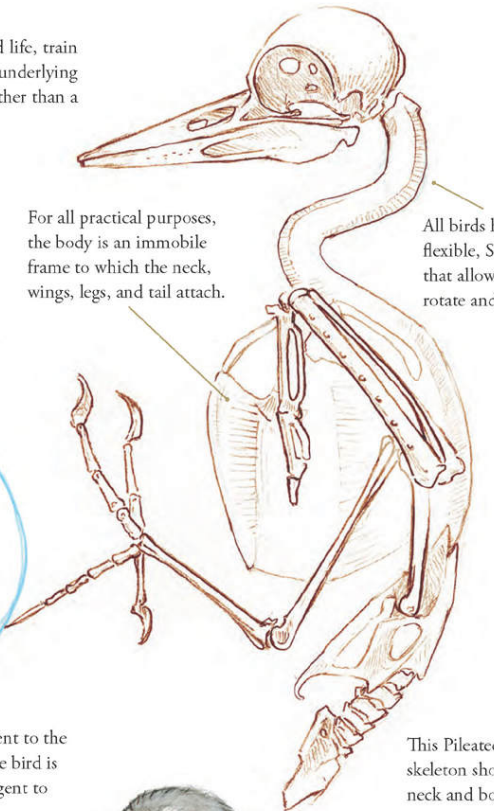
To draw a bird convincingly, with structure, volume, and life, train yourself to see beyond the surface of the feathers to the underlying structure. Your drawing will look like a pile of feathers rather than a living bird if it is not anatomically correct.



The head position changes as the bird moves. A line tangent to the breast and head will help you see head position. When the bird is at rest, the head often sits back behind a vertical line, tangent to the breast.



Avoid the "hot dog" bird. It is easy to get confused by the underlying shape of a long-tailed bird, particularly when it extends its head. The bodies of these birds are not long ovals as in the top drawing, but are deep-chested like other birds.


For all practical purposes, the body is an immobile frame to which the neck, wings, legs, and tail attach.
All birds
flexible, S
that allow
rotate and
This Pileate
skeleton sho
neck and bo

HEAD POSITION

The head and the body are relatively fixed skeletal structures, but the neck t

To draw a bird convincingly, with structure, volume, and life, train yourself

For all practical purposes, the body is an immobile frame to which the neck,

All birds have a long, flexible, S-shaped neck that allows the head to rotate a

Resting head position

Head and body tangents

The head position changes as the bird moves. A line tangent to the breast an

This Pileated Woodpecker skeleton shows the shape of neck and body.

No “hot dog” birds...

A Wrentit extends its neck, dramatically changing its body shape.

Avoid the “hot dog” bird. It is easy to get confused by the underlying shape

ANGLES

Because you build the body with circles, it is easy to over-round your bird. Look fo
where the head meets the body and the tail meets the body. Carve these into th
with straight lines. This is the point at which your drawing will start to look like a r

The forehead may make a continuous slope into the bill or form a sharp forehead angle.
Look fo front an head wh proport intersec
There is often a sharp angle where the undertail covert feathers meet belly feathers.
There may be a flat slop from the back of the he rump, or if the head is at the base of the head.
Avoid the "snowman" bird by carving angles where the head and tail meet the body.

Looking for angles makes you observe the bird in a completely different way than you did when you observed proportions. Your eyes will move along the edges of the shape instead of concentrating on the masses. It is very difficult, perhaps impossible to simultaneously observe both the edge and the mass of an object, so separate these into discrete steps.

ANGLES

Because you build the body with circles, it is easy to over-round your bird. L
look like a real bird.

The forehead may make a continuous slope into the bill or form a sharp fore

There is often a sharp angle where the undertail covert feathers meet belly fe

Look for angles at the front and back of the head where the two proportion c

There may be a flat slope all the way from the back of the head to the rump,

Avoid the “snowman” bird by carving angles where the head and tail meet th

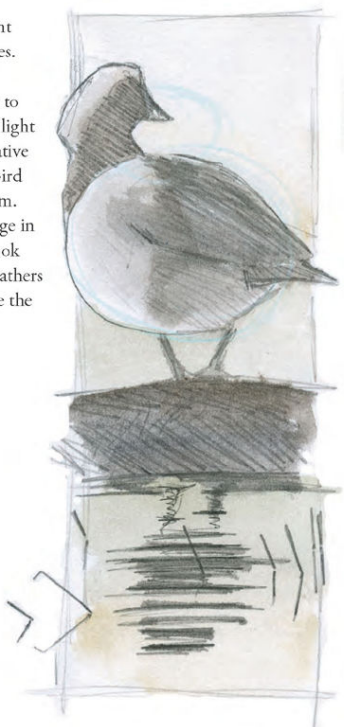
Looking for angles makes you observe the bird in a completely different way
to simultaneously observe both the edge and the mass of an object, so separa

EVERYTHING FOLLOWS SHAPE

If you have the posture, proportion, and angles, your drawing will capture the
the living bird. You do not need any details. If the shape is true, your bird will cor
In the field you often cannot see any details because of lighting or distance. Sim
what you can see.

Even with good optics, it can be difficult to discern the details of a bird that is in the distance, but you can still make a succes
based on what you actually see. Do not make up anything. If you cannot see the eye, don't draw the eye. If you cannot see fe
detail, leave them out. Start to focus on other aspects of what you see, such as the spacing between individual birds.

Backlit birds present their own challenges. Take advantage of the strong contrast to emphasize areas of light and dark. Use negative spaces within the bird to construct its form. Often, dark plumage in full sunlight will look lighter than pale feathers in shadow. Capture the angles and values.



Hazy or foggy conditions also make it difficult to see
with what you have and focus on posture, proportion
Sketches that emphasize what you really see in the fie
successful. They train you to focus on the overall imp
gestalt, of the bird.

EVERYTHING FOLLOWS SHAPE

If you have the posture, proportion, and angles, your drawing will capture th
distance. Simply draw what you can see.

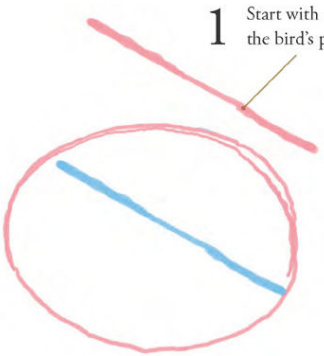
Even with good optics, it can be difficult to discern the details of a bird that
cannot see feet or feather detail, leave them out. Start to focus on other aspe

Backlit birds present their own challenges. Take advantage of the strong con
shadow. Capture the angles and values.

Hazy or foggy conditions also make it difficult to see details. Work with wha
impression, or gestalt, of the bird.

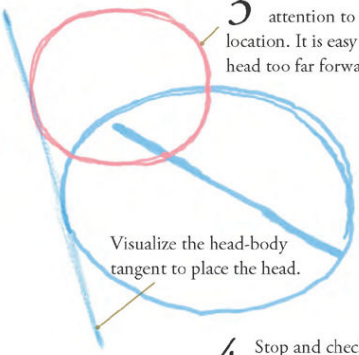
STEP BY STEP: WARBLER

The initial strokes of this line drawing are the foundation on which you add detail. Start lightly and loosely.

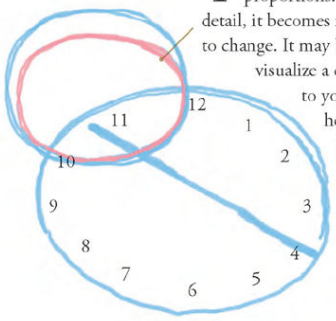


1 Start with one line indicating the bird's posture or long axis.

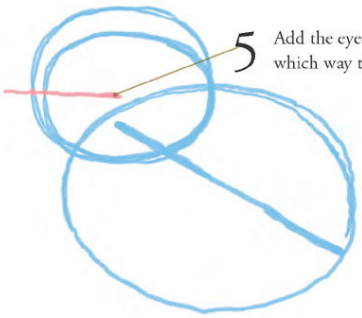
2 Make an oval or egg shape that reflects the form of the body around the axis of the posture line.



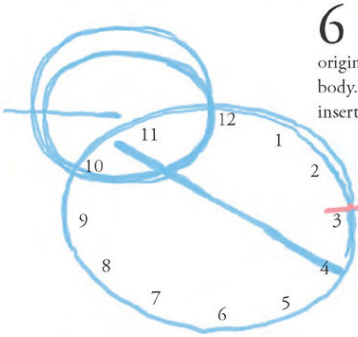
3 Add a head, paying attention to size and location. It is easy to put the head too far forward.



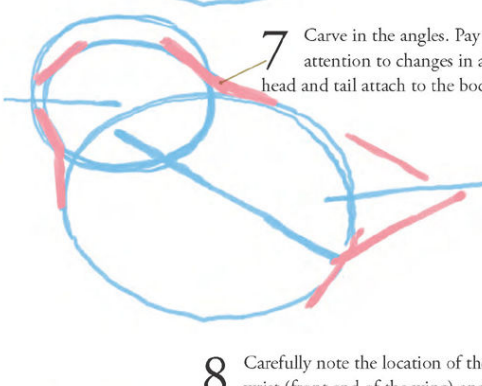
4 Stop and check your proportions. Once you add detail, it becomes more difficult to change. It may be helpful to visualize a clock and say to yourself, "This head settles between 10 and 12."



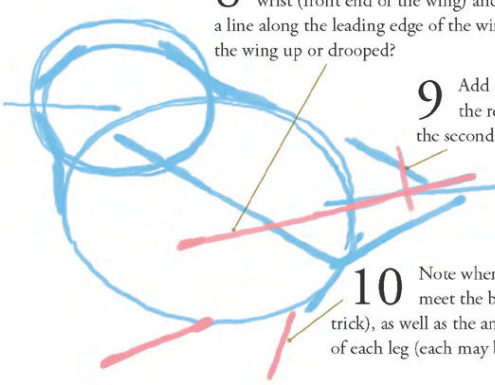
5 Add the eye-bill li which way the bir



6 Draw the tail fro part of the body originates from a poin body. The clock trick r insert the tail at the rig



7 Carve in the angles. Pay attention to changes in a head and tail attach to the boc



8 Carefully note the location of th wrist (front end of the wing) and a line along the leading edge of the wi the wing up or drooped?

9 Add the re the second

10 Note wher meet the b trick), as well as the an of each leg (each may b

STEP BY STEP: WARBLER

5

Add the eye-bill line indicating which way the bird is looking.

The initial strokes of this line drawing are the foundation on which you add

1

Start with one line indicating the bird’s posture or long axis.

Draw the tail from the upper part of the body oval. The tail originates from a

6

12

11

1

10

2

9

3

4

2

8

Make an oval or egg shape that reflects the form of the body around the axis

3 Add a head, paying attention to size and location. It is easy to put the head

7

6

5

Carve in the angles. Pay particular attention to changes in angle where the h

7

Visualize the head-body tangent to place the head.

1

4

8

Stop and check your proportions. Once you add detail, it becomes more diffi

Carefully note the location of the wrist (front end of the wing) and draw a li

9 Add a line along the rear edge of the secondary feathers.

12

11

10

2

9

3

Note where the legs meet the body (clock trick), as well as the angle and len

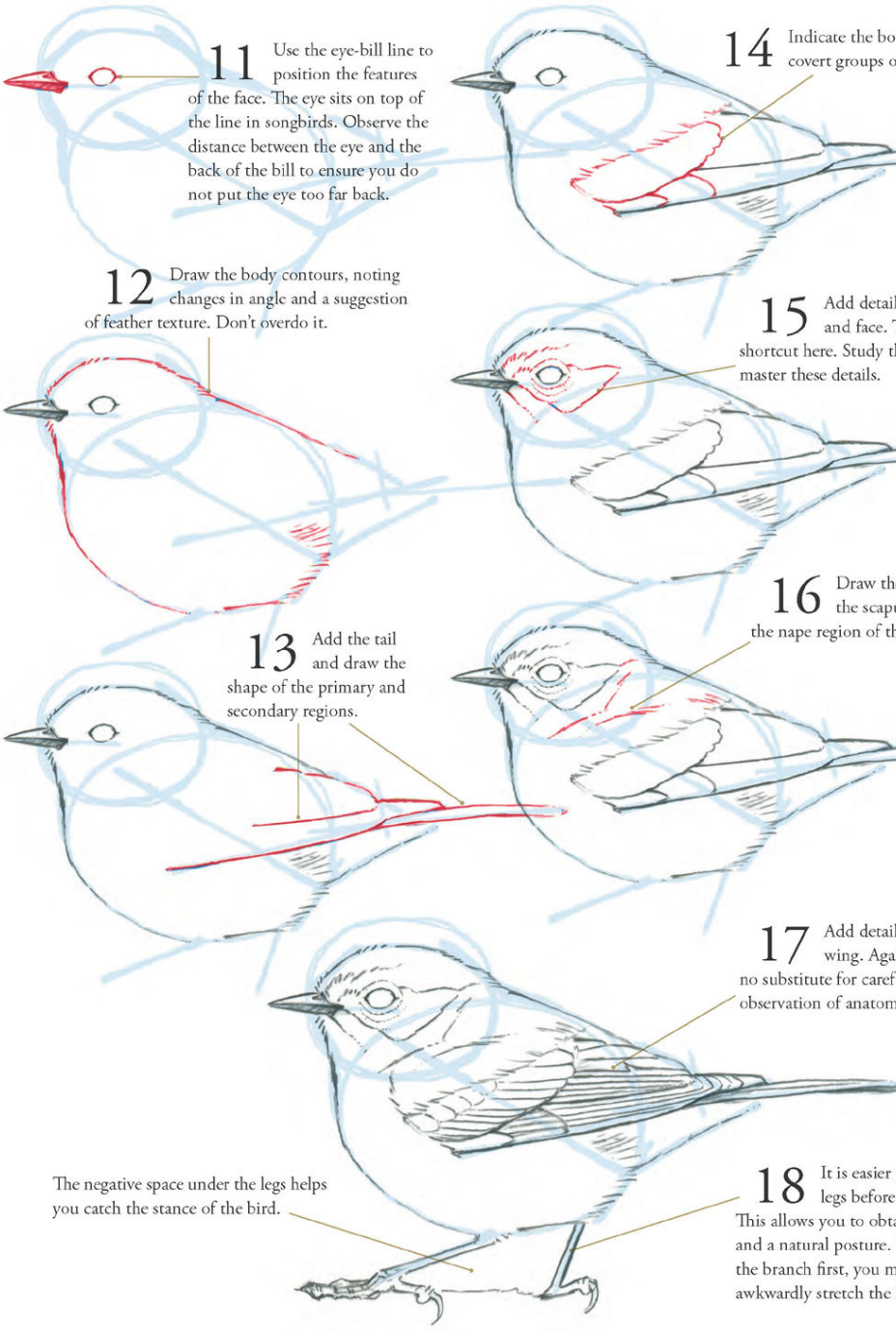
8

7

4

5 6

10


11 Use the eye-bill line to position the features of the face. The eye sits on top of the line in songbirds. Observe the distance between the eye and the back of the bill to ensure you do not put the eye too far back.
12 Draw the body contours, noting changes in angle and a suggestion of feather texture. Don't overdo it.
13 Add the tail and draw the shape of the primary and secondary regions.
14 Indicate the bo covert groups o
15 Add detail and face. shortcut here. Study t master these details.
16 Draw th the scap the nape region of t
17 Add detail wing. Aga no substitute for caref observation of anatom
The negative space under the legs helps you catch the stance of the bird.
18 It is easier legs before This allows you to obt and a natural posture. the branch first, you m awkwardly stretch the

11

14

Indicate the boundaries of the covert groups of the wing.

Use the eye-bill line to position the features of the face. The eye sits on top o

Draw the body contours, noting changes in angle and a suggestion of feather

13 Add the tail and draw the shape of the primary and secondary regions.

12

Add details of the head and face. There is no shortcut here. Study the anaton

15

Draw the upper edge of the scapular feathers and the nape region of the neck

16

17 Add detail to the wing. Again, there is no substitute for careful study and

It is easier to draw the legs before the branch.

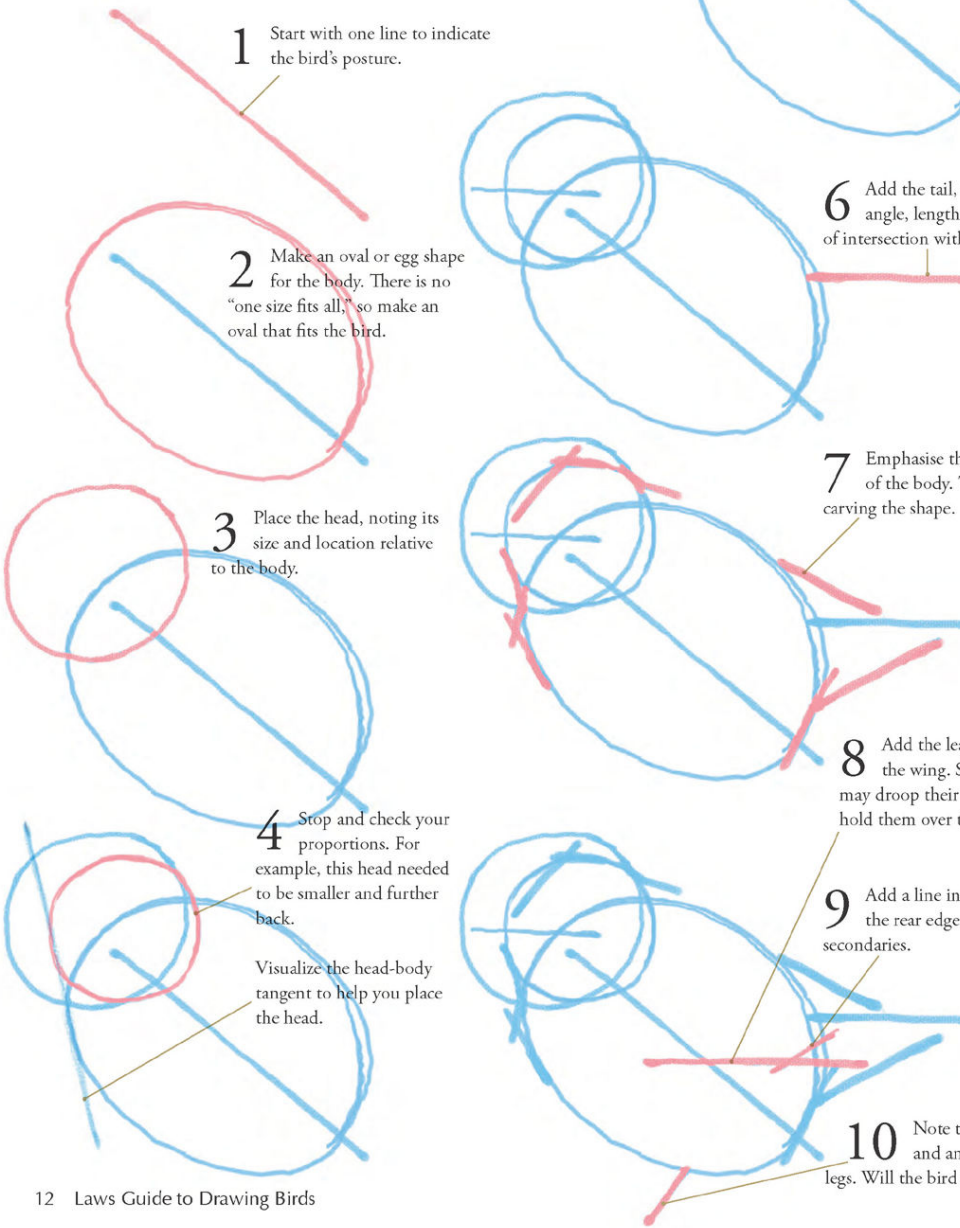
This allows you to obtain balance and a natural posture. If you draw the bra

The negative space under the legs helps you catch the stance of the bird.

18

STEP BY STEP: SPARROW

Here are the same steps in the creation of a second bird. This is a flexible process that you can adapt to your subject and style.


1 Start with one line to indicate the bird's posture.
2 Make an oval or egg shape for the body. There is no "one size fits all," so make an oval that fits the bird.
3 Place the head, noting its size and location relative to the body.
4 Stop and check your proportions. For example, this head needed to be smaller and further back.
Visualize the head-body tangent to help you place the head.
5 Draw the
This line
which way the
and will help pl
and the eye.
6 Add the tail,
angle, length
of intersection wit
7 Emphasise th
of the body.
carving the shape.
8 Add the le
the wing.
may droop their
hold them over
9 Add a line in
the rear edge
secondaries.
10 Note
and a
legs. Will the bird

STEP BY STEP: SPARROW

Draw the eye-bill line. This line indicates which way the bird is looking and

5

Here are the same steps in the creation of a second bird. This is a flexible pro

1

Start with one line to indicate the bird's posture.

Add the tail, noting angle, length, and point of intersection with the body.

6

Make an oval or egg shape for the body. There is no

"one size fits all," so make an oval that fits the bird.

2

Emphasise the angles of the body. Think of carving the shape.

7

Place the head, noting its size and location relative to the body.

3

Add the leading edge of the wing. Some birds may droop their wings or hold

8

4

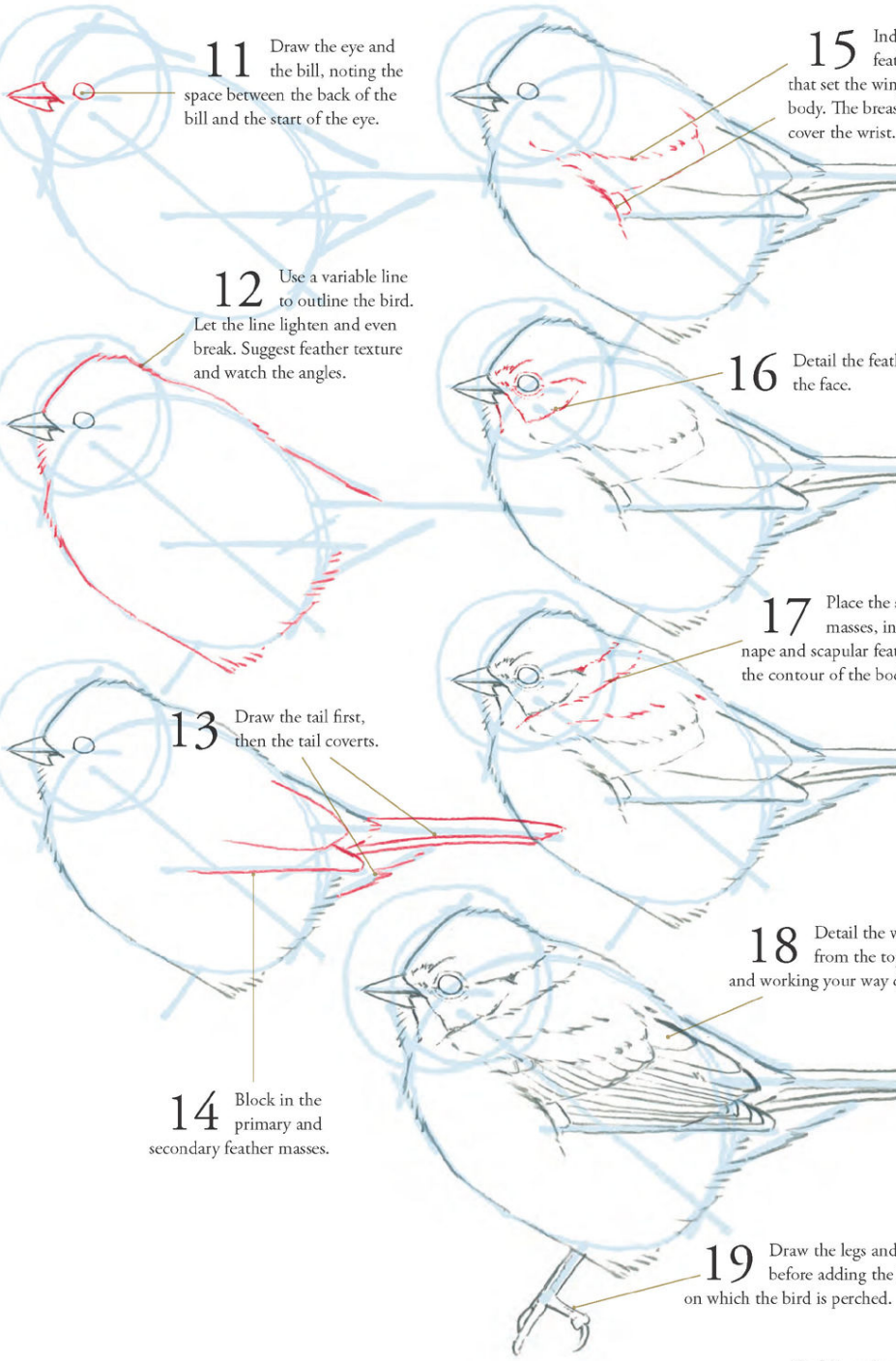
Stop and check your proportions. For example, this head needed to be smalle

Visualize the head-body tangent to help you place the head.

Add a line indicating the rear edge of the secondaries.

10 Note the location and angle of the legs. Will the bird balance?

9


11 Draw the eye and the bill, noting the space between the back of the bill and the start of the eye.
12 Use a variable line to outline the bird. Let the line lighten and even break. Suggest feather texture and watch the angles.
13 Draw the tail first, then the tail coverts.
14 Block in the primary and secondary feather masses.
15 Ind
feat
that set the win
body. The breas
cover the wrist.
16 Detail the feat
the face.
17 Place the
masses, in
nape and scapular feat
the contour of the bo
18 Detail the w
from the to
and working your way
19 Draw the legs and
before adding the
on which the bird is perched.

11 Draw the eye and the bill, noting the space between the back of the bill a

15 Indicate major feather masses that set the wing into the body. The breast

Use a variable line to outline the bird.

Let the line lighten and even break. Suggest feather texture and watch the ar

14 Block in the primary and secondary feather masses.

12

16

Detail the feather groups on the face.

Place the smaller feather masses, indicating the nape and scapular feathers. I

17

13 Draw the tail first, then the tail coverts.

Detail the wings, starting from the topmost feathers and working your way d

18

Draw the legs and feet before adding the branch on which the bird is perche

19

***

Mastering Birc Anatomy

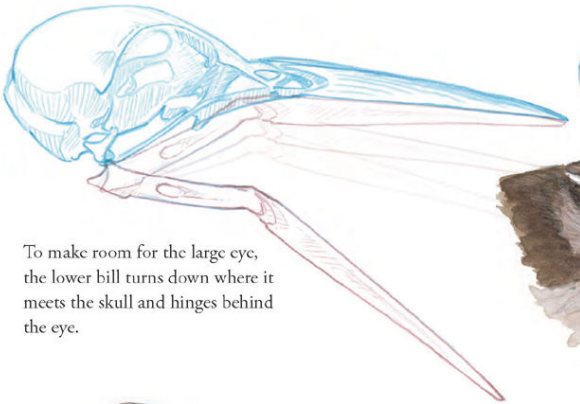
To convincingly draw birds, you must understand what lies beneath the surface feathers, you must understand how feathers grow, overlap, and insert into the create the body, you must have an understanding of the bird's skeletal structure this skeleton, you must be able to perceive the energy, intention, and life of th you understand more than can be drawn, your sketches and paintings will be inf energy, solidity, and life.

Mastering Bird Anatomy

To convincingly draw birds, you must understand what lies beneath the surfa
structure. To pose this skeleton, you must be able to perceive the energy, int

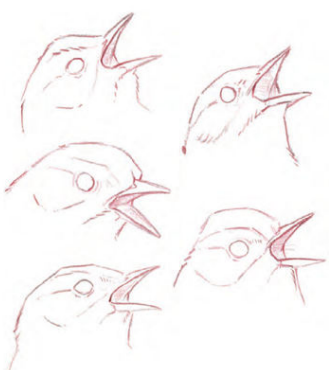
SONGBIRD BILLS

Bills are birds' essential survival tools. Study the variability of bills between specie how bills attach to the head and move.



To make room for the large eye, the lower bill turns down where it meets the skull and hinges behind the eye.

In songbirds, the eye sits on top of the bill line. To place the eye, observe its distance from the front of the head. The distance to the back may change as the bird fluffs its feathers.



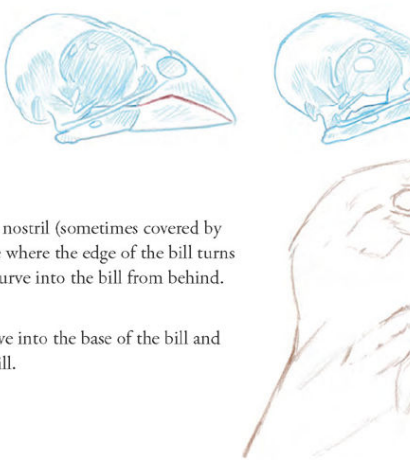
The shape of the open bill is formed by the inner edge of the bill and the skin that stretches across the cheek. You may be able to see both in the angles of the open bill.

Upper mandible. Note small nostril (sometimes covered by feathers) and change in angle where the edge of the bill turns down. Feathers of the head curve into the bill from behind.

Lower mandible feathers curve into the base of the bill and extend out underneath the bill.

When the bill is cannot see its hi is hidden by a st membrane of sk

Some birds show a sharp change in the angle of the cu of the bill (angulated commissure). Technically, this is bill edge (tomium) forms a sharp angle where it meets (rictus). Birds with angulated commissures include me New World blackbirds, seed-cracking finches, sparrow and buntings, and many groups of nectar-feeding bird hummingbirds.



SONGBIRD BILLS

Bills are birds' essential survival tools. Study the variability of bills between

To make room for the large eye, the lower bill turns down where it meets th

When the bill is open, you cannot see its hinge, which is hidden by a stretch

In songbirds, the eye sits on top of the bill line. To place the eye, observe its

Some birds show a sharp change in the angle of the cutting edge of the bill (

(rictus). Birds with angulated commissures include meadowlarks and New W

The shape of the open bill is formed by the inner edge of the bill and the ski

Upper mandible. Note small nostril (sometimes covered by feathers) and cha

Lower mandible feathers curve into the base of the bill and extend out unde

CRANIAL KINESIS

Most bill movement comes from dropping the lower bill. The upper bill can a
independently of the rest of the skull (kinesis), but this movement is usually subt

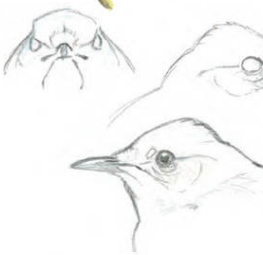
Movement of the upper bill may be subtle. In one study, White-throated Sparrow kinesis was measured using high-speed photography and showed a barely detectable 9.5 degrees of movement in full song. Some birds may show as much as 12 degrees of movement.

Narrow-billed songbirds such as wa
wrens may show observable moveme
upper mandible. It will be subtle, so
and avoid overdoing it. When birds
heads up when they sing, the upper
flip up more than it actually does.

It may be hard to detect movement of the upper bill.

Oops… the bill should not hinge at the front of the head.

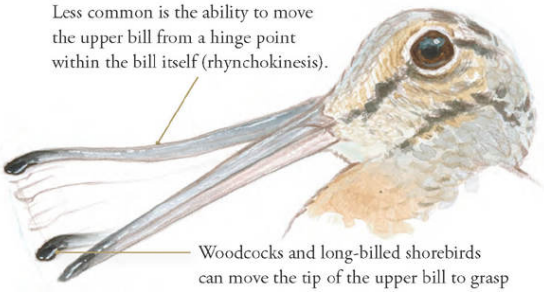
The upper bill should not flip up this much when the bird sings.



Yawning birds or begging chicks may
upper bill more noticeably.

Parrots have the greatest upper bill flexibility of all birds. The movement of the bill helps them manipulate nuts and seeds. This movement occurs at a hinge between the skull and the bill (prokinesis).

Less common is the ability to move the upper bill from a hinge point within the bill itself (rhynchokinesis).



Woodcocks and long-billed shorebirds can move the tip of the upper bill to grasp worms under the mud.

Most bill movement comes from dropping the lower bill. The upper bill can a

Movement of the upper bill may be subtle. In one study, White-throated Spar
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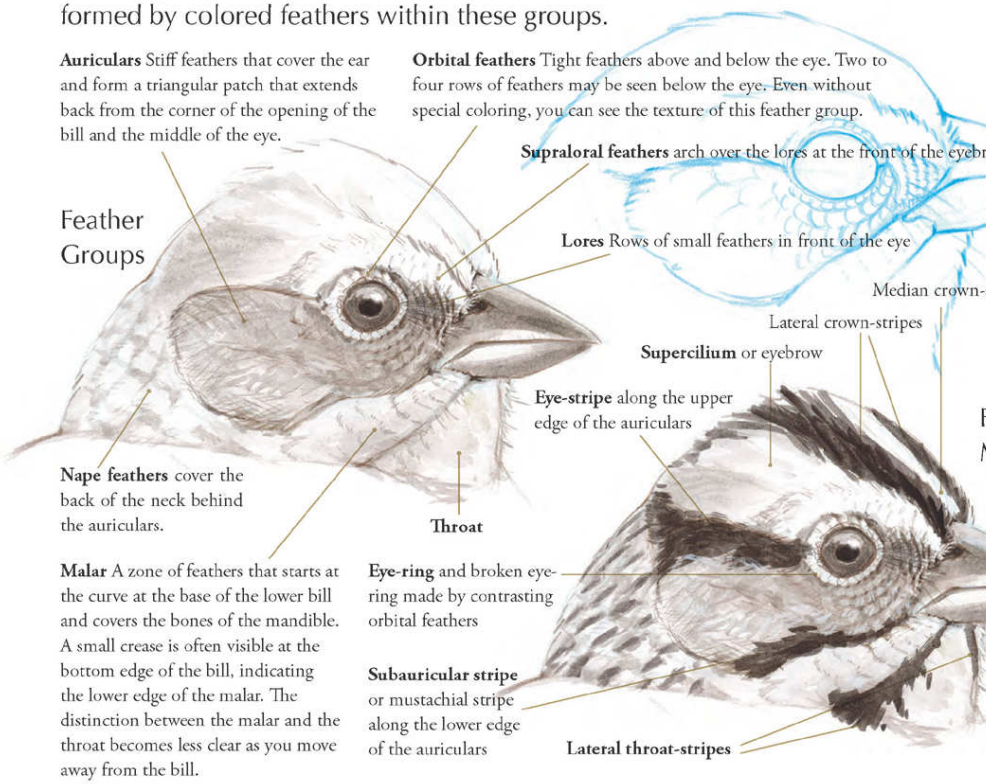
FEATHER GROUPS VS. MARKINGS

Feather groups are present in all birds and contribute to the bird's shape. Mark
formed by colored feathers within these groups.


Feather Groups
Auriculars Stiff feathers that cover the ear and form a triangular patch that extends back from the corner of the opening of the bill and the middle of the eye.
Orbital feathers Tight feathers above and below the eye. Two to four rows of feathers may be seen below the eye. Even without special coloring, you can see the texture of this feather group.
Supraloral feathers arch over the lores at the front of the eyebr
Lores Rows of small feathers in front of the eye
Median crown-
Lateral crown-stripes
Supercilium or eyebrow
Eye-stripe along the upper edge of the auriculars
Nape feathers cover the back of the neck behind the auriculars.
Throat
Malar A zone of feathers that starts at the curve at the base of the lower bill and covers the bones of the mandible. A small crease is often visible at the bottom edge of the bill, indicating the lower edge of the malar. The distinction between the malar and the throat becomes less clear as you move away from the bill.
Eye-ring and broken eye-ring made by contrasting orbital feathers
Subauricular stripe or mustachial stripe along the lower edge of the auriculars
Lateral throat-stripes

Markings can be made by the coloring of entire feather groups.

Other markings are made by dark feathers along the edges of feather groups.

Some markings are made by a com
of the colors of feather groups and
at the edges of groups.

FEATHER GROUPS VS. MARKINGS

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Feather

Groups

Median crown-stripe

Lateral crown-stripes Supercilium or eyebrow

Eye-stripe along the upper edge of the auriculars

Nape feathers cover the back of the neck behind the auriculars.

Feather Markings

Throat

Eye-ring and broken eye-ring made by contrasting orbital feathers

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Markings can be made by the coloring of entire feather groups.

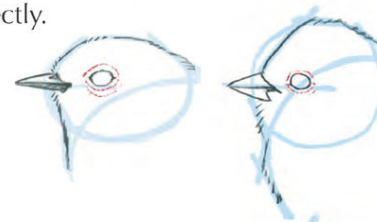
Other markings are made by dark feathers along the edges of feather groups.

Some markings are made by a combination of the colors of feather groups ar

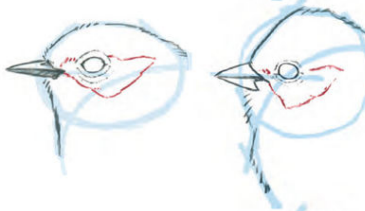
STEP BY STEP: DRAWING HEAD DETAILS

Before drawing head markings, lightly outline the feather groups. These give str
the face and help you place the markings correctly.

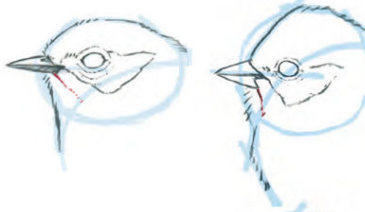
Start by drawing the eye-ring as a zone of tightly packed feathers that circle the eye. You may find it split into two sections, one above and one below the eye. There may be additional rows below the eye.



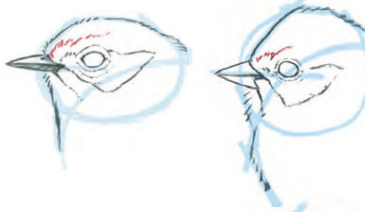
Draw the ear patch as a triangle of feathers that starts behind the eye. The front edge begins at the rear corner of the bill. This edge may change angle below the rings of feathers that surround the eye. The feathers in front of the eye puff up and out to form the lores.



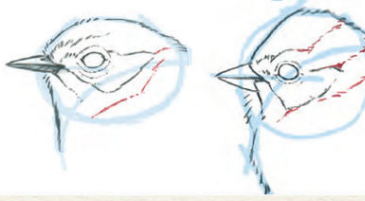
A small crease drops from the bottom corner of the bill. It will be more clearly defined closer to the bill. The malar region sits between this crease and the ear patch.



The supercilium is the stripe above the eye. The front edge of this stripe makes an arc over the lores called the supraloral region.



Birds' necks are flexible, so the nape feathers that cover the neck will take on a variety of shapes depending on the position of the bird's head. There may be a change in the angle of the head profile where the nape connects to the back of the head. Note that this sparrow's eyeline is raised because the nape and crest feathers are lofted.



When a bird lifts its nape f
contour of the head, the sh
feather groups, and the hea
change dramatically. Note
rear edge of the auriculars
supercilium broaden and p

STEP BY STEP: DRAWING HEAD DETAILS

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Draw the ear patch as a triangle of feathers that starts behind the eye. The fr
form the lores.

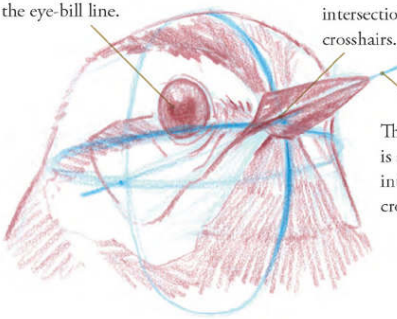
When a bird lifts its nape feathers, the contour of the head, the shape of the

TURNING HEADS

Crosshairs through the bill and eye and around the head will help you keep track alignment of the bill, eye, and feather groups as a bird moves its head.

Visualize and draw the eye-bill line as a circle that wraps all the way around the head. Draw a second circle through the middle of the face and around the back of the head.

A line through the intersection of these two circles aligns the bill. Bill length will appear to change with head position. In a side view, you will see the full length of the bill. It appears shorter in 3/4 views.



The symmetry of lines on the head is maintained by keeping track of the center line and the eye-bill line. As the head turns, th lines as circles that wrap around the head. Align facial stripes and markings relative to these lines. Pay particular attention to t made by patterns that wrap around the far side of the head. It will help to look at these as negative shapes. Also note that the s eye will be foreshortened. At what point can you no longer see the eye on the far side of the head?

TURNING HEADS

Crosshairs through the bill and eye and around the head will help you keep t

Visualize and draw the eye-bill line as a circle that wraps all the way around

The eye sits on top of the eye-bill line.

The base of the bill fits over the intersection of the crosshairs.

The tip of the bill is aligned with the intersection of the crosshairs.

A line through the intersection of these two circles aligns the bill. Bill length

The symmetry of lines on the head is maintained by keeping track of the cen
attention to the shapes made by patterns that wrap around the far side of the
the head?

HEAD ANGLES

Bird heads bulge outwards below the eye. Look for this change in angle in fro
3/4 views. This bulge is more pronounced in some birds, such as the flycatch
Myiarchus and Vermilion Flycatchers.

In profile the back of the bird's head is rounded. There may be a change in angle at the nape.

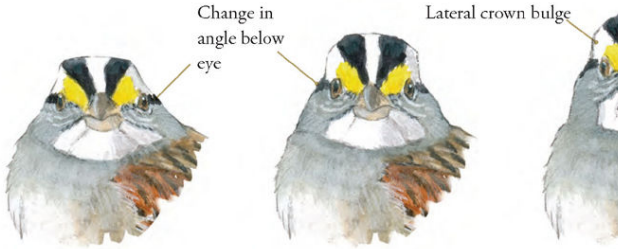
In a 3/4 view you can see a hint of the change in the angle below the eye on the far side. The back of the head is more rounded. At this angle the round eye becomes an ellipse.

Lateral crown bulge

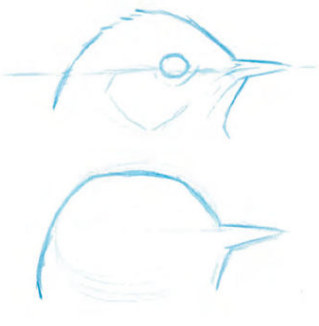
In the front view, note the change in the slope of the silhouette of the head below the eye. The angle is even more pronounced when the head is retracted.

Change in angle below eye

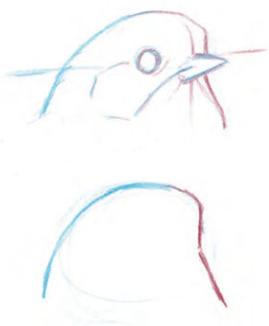
Lateral crown bulge



From the side, the head is rounded.



In a 3/4 view you see both the rounded back and an angular side of the head.



From the front, the head i
resembling the command
a rocket.

HEAD ANGLES

Bird heads bulge outwards below the eye. Look for this change in angle in fr

In profile the back of the bird's head is rounded. There may be a change in a

In a 3/4 view you can see a hint of the change in the angle below the eye on

In the front view, note the change in the slope of the silhouette of the head b

Lateral crown bulge

Change in angle below eye

Lateral crown bulge

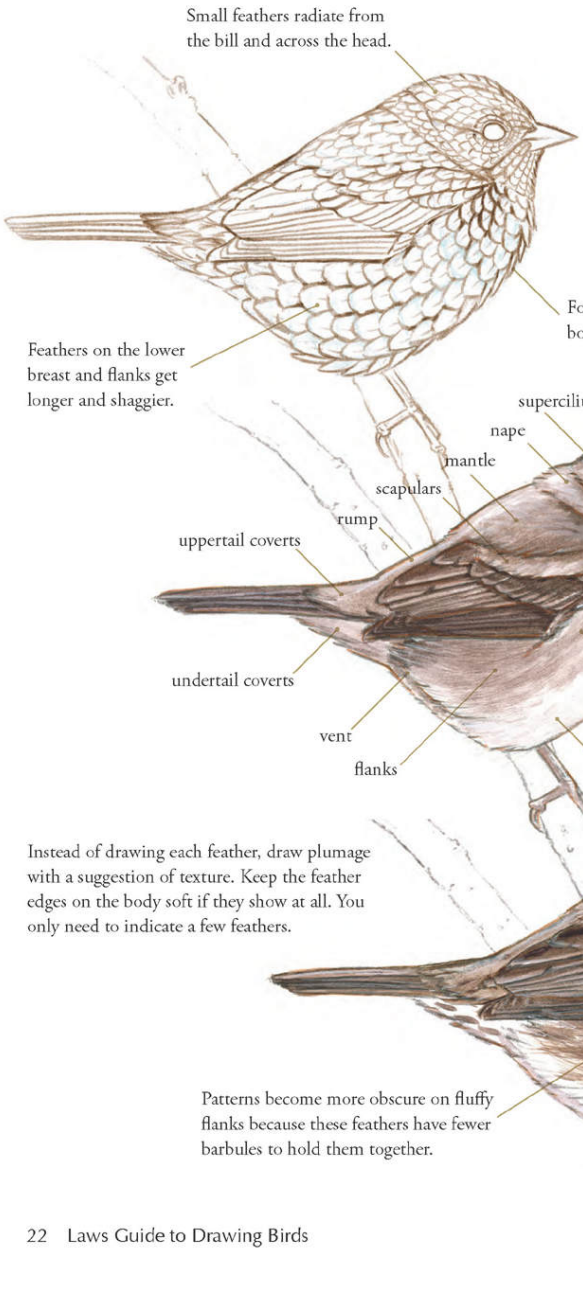
From the side, the head is rounded.

In a 3/4 view you see both the rounded back and an angular side of the heac

From the front, the head is angular, resembling the command module of a ro

BODY FEATHERS

One key to drawing feathers is to understand more of the anatomy than can be
Study feather placement and groups to inform your rendering of the plumage.


Small feathers radiate from the bill and across the head.
Feathers overlap like roof shingles, shedding wi
The feathers also emerge in groups. Within
they make geometric rows that point in a simi
increasing in size from front to back. Studying f
will give you a mental map of feather direction ar
While this is a tremendously useful exercise, av
every feather that you know should be there or y
look like pinecones or lizards.
Foreshortened feathers at the body's edge look narrower.
Feathers on the lower breast and flanks get longer and shaggier.
supercilium
crown
nape
auriculars
mantle
lores
scapulars
rump
malar
uppertail coverts
throat
The boundaries betw
groups are often ma
subtle creases or sha
Feather groups may
through changes in
markings.
breast
undertail coverts
sides
vent
flanks
belly
Note the char
direction of p
between mant
scapulars.
Instead of drawing each feather, draw plumage with a suggestion of texture. Keep the feather edges on the body soft if they show at all. You only need to indicate a few feathers.
Areas with sm
have crisper, r
defined patter
Streaks on the chest fo
centers of the feather
Patterns become more obscure on fluffy flanks because these feathers have fewer barbules to hold them together.

BODY FEATHERS

One key to drawing feathers is to understand more of the anatomy than can

Feathers overlap like roof shingles, shedding wind and water. The feathers a
a mental map of feather direction and placement. While this is a tremendous

The boundaries between feather groups are often marked by subtle creases o

Small feathers radiate from the bill and across the head.

Foreshortened feathers at the body's edge look narrower.

Feathers on the lower breast and flanks get longer and shaggier.

supercilium

auriculars malar

crown lores throat

nape

mantle scapulars

uppertail coverts rump

breast

undertail coverts

sides

belly

vent

Note the change in direction of pattern between mantle and scapulars.

flanks

Instead of drawing each feather, draw plumage with a suggestion of texture.

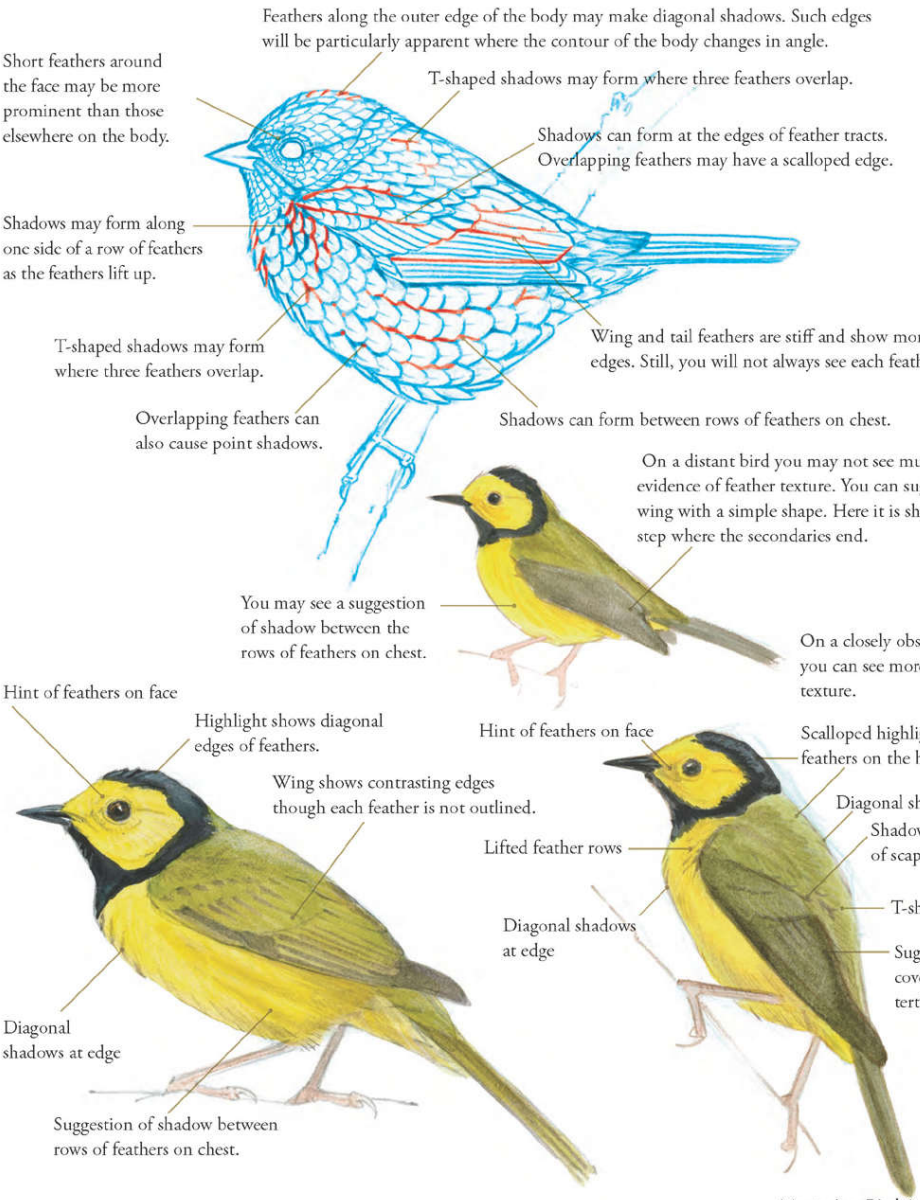
Areas with small feathers have crisper, more sharply defined patterns.

Patterns become more obscure on fluffy flanks because these feathers have fe

Streaks on the chest follow the centers of the feather rows.

SUGGESTING FEATHERS

Draw plumage, not individual feathers. You can give the impression of feather drawing them. Show shadows where feathers divide at the edges of feather g where feathers are slightly fluffed. If you draw every feather the bird will look sc


Feathers along the outer edge of the body may make diagonal shadows. Such edges will be particularly apparent where the contour of the body changes in angle.
Short feathers around the face may be more prominent than those elsewhere on the body.
T-shaped shadows may form where three feathers overlap.
Shadows can form at the edges of feather tracts. Overlapping feathers may have a scalloped edge.
Shadows may form along one side of a row of feathers as the feathers lift up.
T-shaped shadows may form where three feathers overlap.
Wing and tail feathers are stiff and show mor edges. Still, you will not always see each feath
Overlapping feathers can also cause point shadows.
Shadows can form between rows of feathers on chest.
On a distant bird you may not see mu evidence of feather texture. You can su wing with a simple shape. Here it is sh step where the secondaries end.
You may see a suggestion of shadow between the rows of feathers on chest.
On a closely obs you can see mor texture.
Hint of feathers on face
Highlight shows diagonal edges of feathers.
Wing shows contrasting edges though each feather is not outlined.
Hint of feathers on face
Scalloped highli feathers on the h
Diagonal sh
Shadow of scap
Lifted feather rows
T-sh
Diagonal shadows at edge
Sug cov tert
Diagonal shadows at edge
Suggestion of shadow between rows of feathers on chest.

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On a distant bird you may not see much evidence of feather texture. You can

You may see a suggestion of shadow between the rows of feathers on chest.

Hint of feathers on face

Highlight shows diagonal edges of feathers.

Wing shows contrasting edges though each feather is not outlined.

On a closely observed bird, you can see more feather texture.

Scalloped highlight suggests feathers on the head and back.

T-shaped shadow

Hint of feathers on face

Diagonal shadows at edge

Lifted feather rows

Diagonal shadows at edge

Shadow at edge of scapulars

Suggestion of coverts and tertials in wing

Diagonal shadows at edge

Suggestion of shadow between rows of feathers on chest.

FEATHERS OF THE CHEST

Chest feathers are not a continuous set of feathers but are composed of groups standing the direction and size of these feathers will help you draw the chest.

FEATHER GROUPS

Breast feathers form a mass across the upper chest. When fluffed, these may protrude from the rest of the chest feathers.

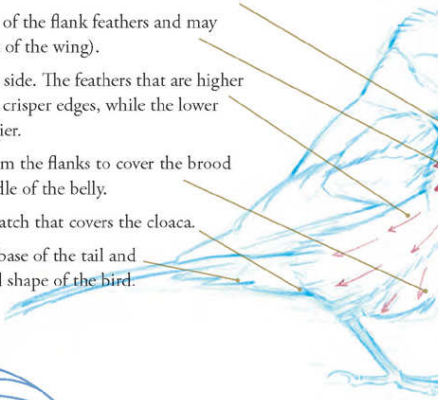
The **sides** connect to the top of the flank feathers and may fluff out over the wrist (front of the wing).

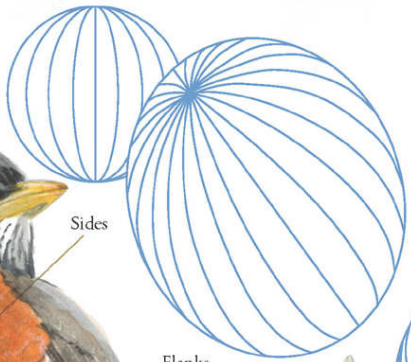
Flank feathers run down the side. The feathers that are higher on the chest are smaller with crisper edges, while the lower feathers are longer and shaggier.

Belly feathers flip inward from the flanks to cover the brood patch (bald spot) in the middle of the belly.

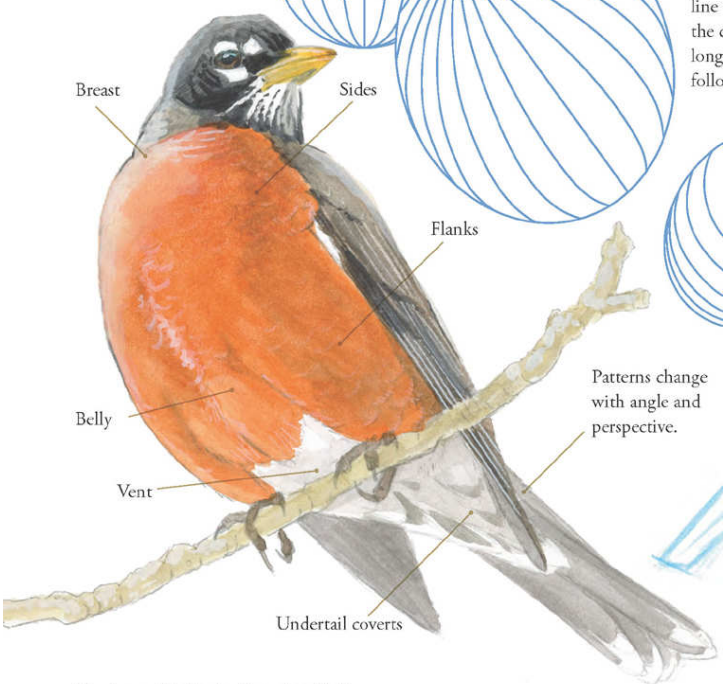
Vent feathers make a small patch that covers the cloaca.

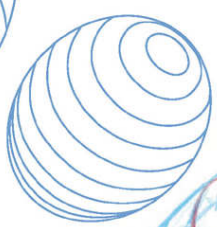
Undertail coverts cover the base of the tail and contribute to the streamlined shape of the bird.



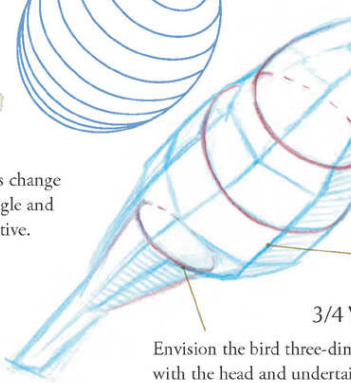


Use the groove between the belly feathers establish the direction and curvature of th line of the breast. The more the bird rotat the center line will curve, much in the sa longitude lines wrap around a globe. Feat follow the same lines as they wrap around





Patterns change with angle and perspective.



3/4 V

Envision the bird three-din with the head and undertai intersecting the body in ell Curve shadows and feather around the form instead of them straight to the edge.

FEATHERS OF THE CHEST

Chest feathers are not a continuous set of feathers but are composed of grou

FEATHER GROUPS

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Undertail coverts cover the base of the tail and contribute to the streamlined

Breast

Belly

Use the groove between the belly feathers to help establish the direction and
Feather patterns follow the same lines as they wrap around the body.

Sides

Undertail coverts

Flanks

Patterns change with angle and perspective.

Center line

Vent

3/4 VIEW

Envision the bird three-dimensionally, with the head and undertail coverts i

CHEST PATTERNS

To maintain the symmetry of breast feather patterns, draw the center line of the b
keep track of the patterns along each side.

Establish the center line of the breast (longitude). Patter
will be roughly symmetrical on either side of this line
right angles to the center line (latitude) to help maintai
of the chest patterns. The patterns need not be perfect
There will be variation in the streaking and spotting pa
side, but the basic structure will maintain its symmetry
Note how the block
feathers changes shap
foreshortens as the bi
Belly feathers make a faint crease where they come together.
Draw a line down the center of the breast and keep breast patterns more or less symmetrical on each side of that line. In a 3/4 view, the breast line is curved.
Feather patterns wrap around the curvature of the chest. Pay particular attention to the change in the angles on the far side of the breast.
Feathers on the upper breast are smaller and make crisp patterns. Feathers on the lower belly are longer and make more diffuse or softer lines.

CHEST PATTERNS

To maintain the symmetry of breast feather patterns, draw the center line of

Establish the center line of the breast (longitude). Patterns on the breast will
not be perfectly symmetrical. There will be variation in the streaking and spo

Note how the block of the wing feathers changes shape and foreshortens as t

Belly feathers make a faint crease where they come together.

Draw a line down the center of the breast and keep breast patterns more or l

Feather patterns wrap around the curvature of the chest. Pay particular atter

Feathers on the upper breast are smaller and make crisp patterns. Feathers o

BACK FEATHERS

The back of the bird is divided into four zones: the mantle, scapular feathers, ru
uppertail coverts. These areas may have different colors or patterns.

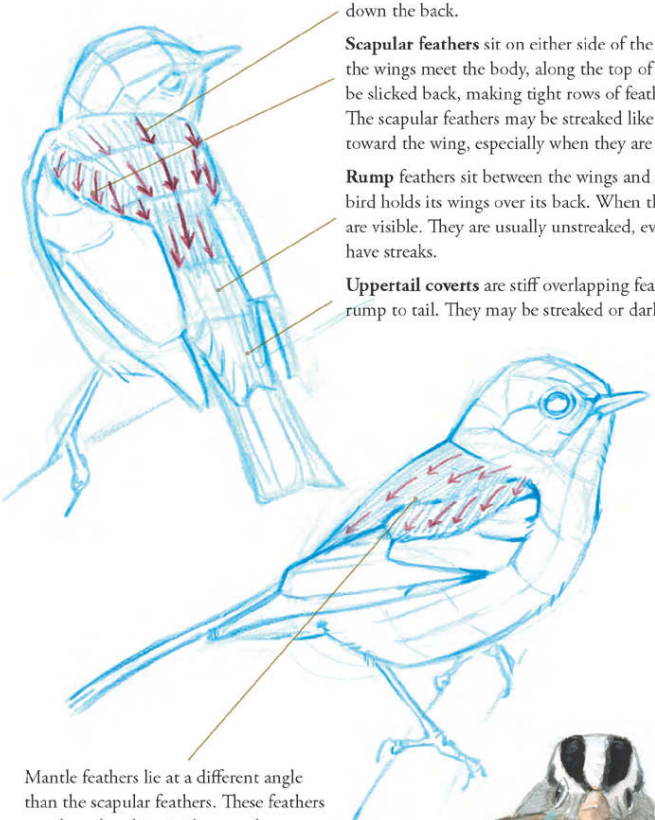
FEATHER GROUPS

The **mantle** feathers occupy the middle of the back and are oriented straight back. Mantle feathers are often streaked, making parallel stripes that run down the back.

Scapular feathers sit on either side of the mantle and cover the space where the wings meet the body, along the top of the folded wing. The scapulars can be slicked back, making tight rows of feathers, or may droop over the wing. The scapular feathers may be streaked like the back but usually point down toward the wing, especially when they are drooped.

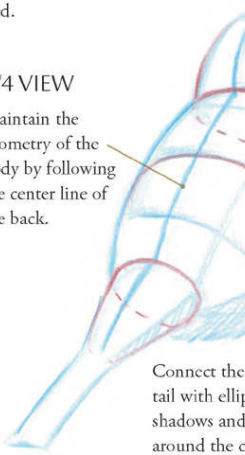
Rump feathers sit between the wings and are completely covered when the bird holds its wings over its back. When the wings droop, the rump feathers are visible. They are usually unstreaked, even if the bird's mantle and scapulars have streaks.

Uppertail coverts are stiff overlapping feathers that smooth the contour from rump to tail. They may be streaked or dark-tipped.



3/4 VIEW

Maintain the geometry of the body by following the center line of the back.



Connect the
tail with ellip
shadows and
around the c

Mantle feathers lie at a different angle than the scapular feathers. These feathers may be colored in similar ways but you will see a change in the direction of the barring on the back.

Tuck the wing under the sc
into the side of the breast fe
avoid a wing that feels "past
side of the bird.

The rump feathers are hidden when the wings fold over the back. If the bird droops its wings, this region becomes visible and may reveal colors and patterns otherwise hidden, such as the white patches of Olive-sided Flycatchers or the gray rumps of Chipping Sparrows.

The uppertail coverts may s
pattern and definition of th
than the softer rump feathe

BACK FEATHERS

The back of the bird is divided into four zones: the mantle, scapular feathers

FEATHER GROUPS

The mantle feathers occupy the middle of the back and are oriented straight

Scapular feathers sit on either side of the mantle and cover the space where
may be streaked like the back but usually point down toward the wing, espe

Rump feathers sit between the wings and are completely covered when the b

Uppertail coverts are stiff overlapping feathers that smooth the contour from

3/4 VIEW

Maintain the geometry of the body by following the center line of the back.

Connect the head and tail with ellipses and wrap shadows and patterns arou

Mantle feathers lie at a different angle than the scapular feathers. These feat

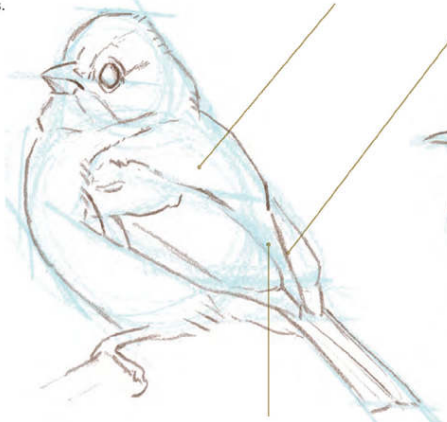
The rump feathers are hidden when the wings fold over the back. If the bird
Chipping Sparrows.

Tuck the wing under the scapulars and into the side of the breast feathers to

The uppertail coverts may show more pattern and definition of their edges th

TRICKS FOR THE BACK VIEW

Drawing a line down the middle of the back will help you keep the symmetry of stripes on the mantle or patterns in the scapular feathers.



Wings that are folded up on the back may sculpt an interesting negative space of rump between them. Look at the shape of this rump wedge to help you place the wings the right distance apart.

The foreshortened wing that wraps around the far sid can be difficult to draw. Take advantage of photograp at the variety of shapes made by the far wings. Keep i using a minimum of detail, block in the wing shape. what you see. Another great way to study this is to m sketches as you slowly rotate a mounted bird.

Keep el the bac symme aligning sets of across t

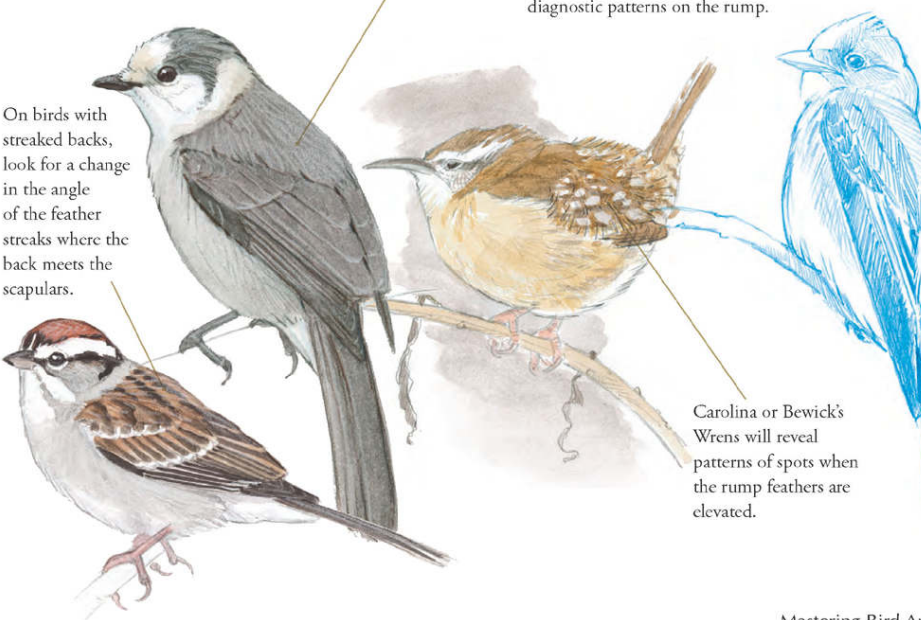
SCAPULARS

The distinction between mantle and scapular feathers is often very subtle. On birds with no streaking or patterning on the back, look for a faint seam between the feather groups.

On birds with streaked backs, look for a change in the angle of the feather streaks where the back meets the scapulars.

RUMP

Songbirds can loft and deploy their rump feathers. W cold, these elevated rump feathers almost completely wings. Some species, such as Olive-sided Flycatchers, diagnostic patterns on the rump.



Carolina or Bewick's Wrens will reveal patterns of spots when the rump feathers are elevated.

TRICKS FOR THE BACK VIEW

Drawing a line down the middle of the back will help you keep the symmetry

The foreshortened wing that wraps around the far side of the bird can be dif
Learn to trust what you see. Another great way to study this is to make a ser

Keep elements of the back and wings symmetrical by aligning them with sets

Wings that are folded up on the back may sculpt an interesting negative spac

SCAPULARS

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RUMP

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Rump feathers elevated

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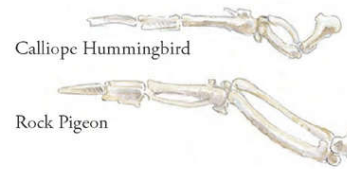
Carolina or Bewick's Wrens will reveal patterns of spots when the rump feath

WINGS AND THE AUTOMATIC LINKAGE SYSTEM

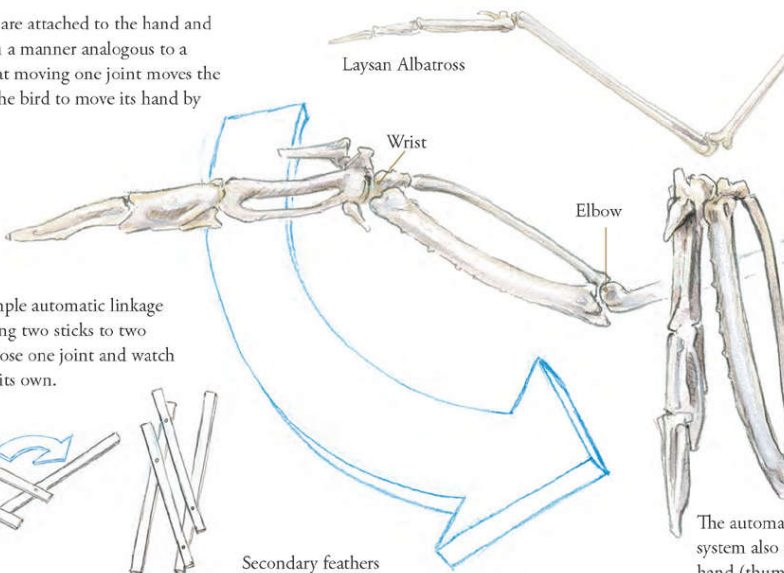
To reduce the need for heavy muscles in wing operation, the bones of a bird's attached so that moving the elbow automatically moves the wrist.

Birds' arm bones are arranged in a manner homologous to the human arm. From the shoulder there are one upper arm bone (humerus), two forearm bones (radius and ulna), and a hand. The major difference is that the bird's fingers are fused into a solid unit while the thumb remains free. These bones have different proportions in different species. A Calliope Hummingbird has short, strong arm bones to help flap the wing quickly. A Rock Pigeon has mid-size arm bones for a good general-purpose wing. In contrast, a Laysan Albatross has long, light arm bones for a long, gliding wing which is more difficult to flap.

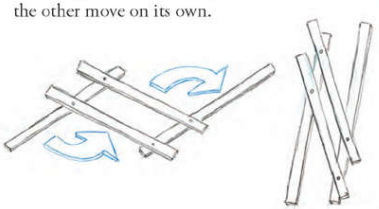
Comparison of relative proportions of the wings scaled so that the hand bones are th



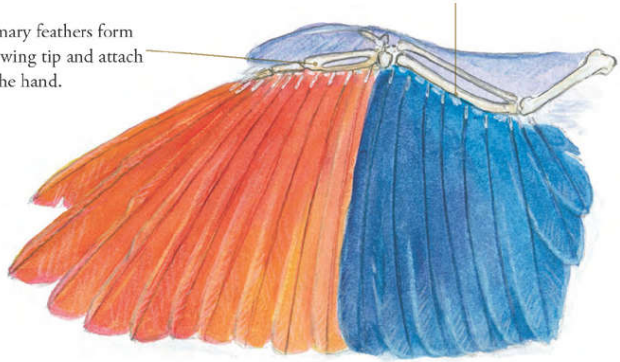
The forearm bones are attached to the hand and upper arm bones in a manner analogous to a parallel ruler, so that moving one joint moves the other. This allows the bird to move its hand by flexing the elbow.



You can make a simple automatic linkage system by connecting two sticks to two sticks. Open and close one joint and watch the other move on its own.



The automa system also hand (thum the wing ret



Flight feathers of the wing are divic two groups, primaries and secondar groups move with the wing bones.

Primary feathers are attached to These feathers form a fan at the tip o Primary feathers provide thrust and fast-flying birds.

Secondary feathers attach to th (ulna) and extend straight back. Th provide lift and comprise much of soaring birds.

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Calliope Hummingbird

Rock Pigeon

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You can make a simple automatic linkage system by connecting two sticks to

Laysan Albatross Comparison of relative proportions of the bones of bird win

Elbow

Secondary feathers attach to the ulna.

Wrist

The automatic linkage system also twists the hand (thumb down) as the wing

Primary feathers form the wing tip and attach to the hand.

Flight feathers of the wing are divided into two groups, primaries and second

Primary feathers are attached to the hand. These feathers form a fan at the ti

Secondary feathers attach to the forearm (ulna) and extend straight back. Th

SPREAD YOUR WINGS

As the wing opens and closes, the primary and secondary feathers move in differ
The primary feathers move like a fan, while the secondary feathers either remai
but spread apart or pack together more closely.

Greater secondary coverts
Median secondary
Lesser s
Alula (feathers attached to thumb, which can open independently of the rest of the wing)
Primary coverts
Leading edge of wing (cuts into the wind as the bird flies)
Emargination (narrowing of the outer web of the feather on the last few primaries)
Primary feathers
Secondary feathers
Trailing edge of wing
Tertial feathers, the last 3 secondary feath
graduated in size and often distinctively c

On a tightly closed wing, primaries form a neat pile with parallel leading edges and symmetrically arranged trailing edges. Secondaries are tightly stacked and cover the primaries.

As the wing opens, the primaries fan and the stack of secondaries spreads out.

In a fully expanded wing, the fan of the primaries is fully open. If the feathers at the tip are emarginated or notched, you will see "fingers" at the wing tip. The secondaries, still parallel, are fully spread.

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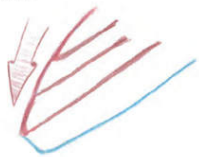
WING TRICKS

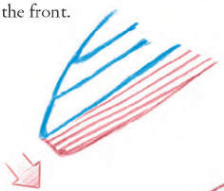
Get comfortable with drawing wings. If you choose to draw each feather, lay in the
of the wing, then start with the topmost feather in each section and work down fro

SECONDARIES

Start drawing secondary feathers with the innermost or smallest tertial feather and then the other two tertials, working your way down.

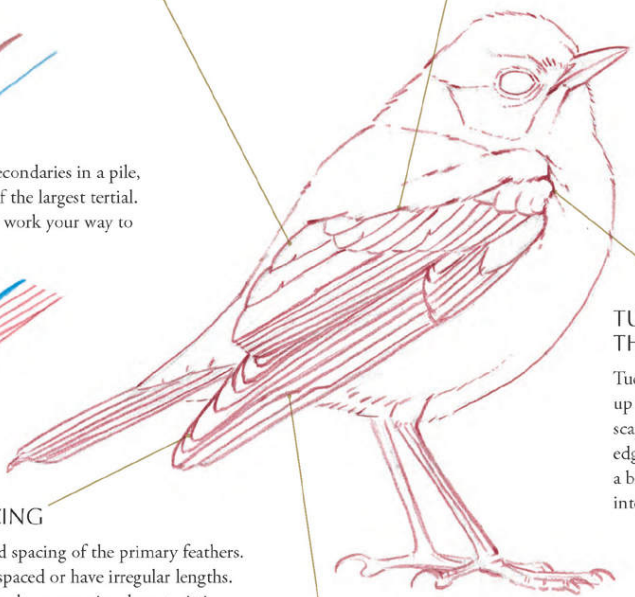


Add the rest of the secondaries in a pile, parallel to the edge of the largest tertial. Start at the back and work your way to the front.



SCAPULARS COVER THE TOP OF THE W

Fluff the scapular feathers down over the coverts to for
edge of the wing.

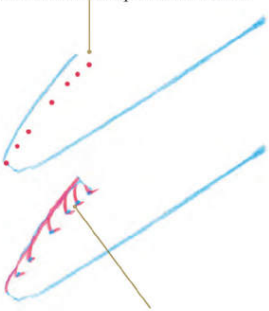


TUCK THE WIN
THE BREAST FE

Tuck the front edge o
up under the breast fe
scapular feathers cove
edge of the wing. Wh
a bird will bury its wr
into its feathers.

PRIMARY SPACING

Note the number and spacing of the primary feathers. They may be evenly spaced or have irregular lengths. This may be due to molt or a species characteristic. Place a dot at the tip of each feather.



Draw the trailing edges first, then complete each tip before drawing the parallel leading edges. The tips of the primary feathers usually become more pointed as you get to the tip of the wing (exception: some Eurasian warblers).

EMARGINATION LINE

The diagonal emargination line is the result of emargination (narrowing of the outer web of the feather) occurring closer to the feather tip as you move from the leading edge inward. Thus, when the primaries are folded together, the combined locations of the emargination point produce the emargination line.

If the wing shows emargination, draw a diagonal line showing the location, slope, and extent of the steps on the outer feathers. The location and angle of the line will vary between species.

As you draw the leading edge of each feather, show the step at the emargination point.

Emarginatio

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SCAPULARS COVER THE TOP OF THE WING

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TUCK THE WING INTO THE BREAST FEATHERS

Tuck the front edge of the wing up under the breast feathers. The scapular fe

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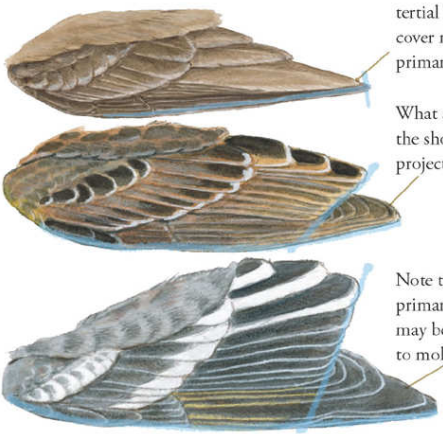
WING PROPORTIONS

The relative proportions of the parts of the wing differ between species. Under range of variability and look for these proportions as you draw.

Below, the folded wings of six birds are scaled so that the secondary feathers are the same length. Note how far the primaries extend behind the secondaries. This distance is called the primary projection. It is an important field mark in identifying birds and is important to include in your sketches. If the secondary feathers shorten from the tip of the last tertial to the wrist, the back edge of the secondaries will form an angle. Look through bird photographs and try to pick out birds that show variation in primary projection or the angle of the secondaries.



Pipits and wagtails have very long tertial feathers that cover most of the primary feathers.

What sparrow has the shortest primary projection?

Note the spacing of primary feathers. It may be uneven due to molt or species.

Pewees have a much longer primary projection than *Empidonax* flycatchers.

Falcons have longer primaries and shorter secondaries than buteos.

Swifts, swallows, and hummingbirds have extremely long primary feathers and reduced secondaries.

Where is the point of the wrist? It may be hidden by breast feathers.

How far down do the covert feathers reach?

What is the angle of the bottom edge of the secondaries?

Where on the back do the secondary feathers end?

How far do the primaries extend beyond the secondaries and where do they end relative to the tail?

Primary feathers provide thrust, while seco provide lift. Birds that do a lot of soari wide secondary feathers. Birds that flap speed have long primary feathers. Thus b emphasize secondary feathers, while falc primary feathers.

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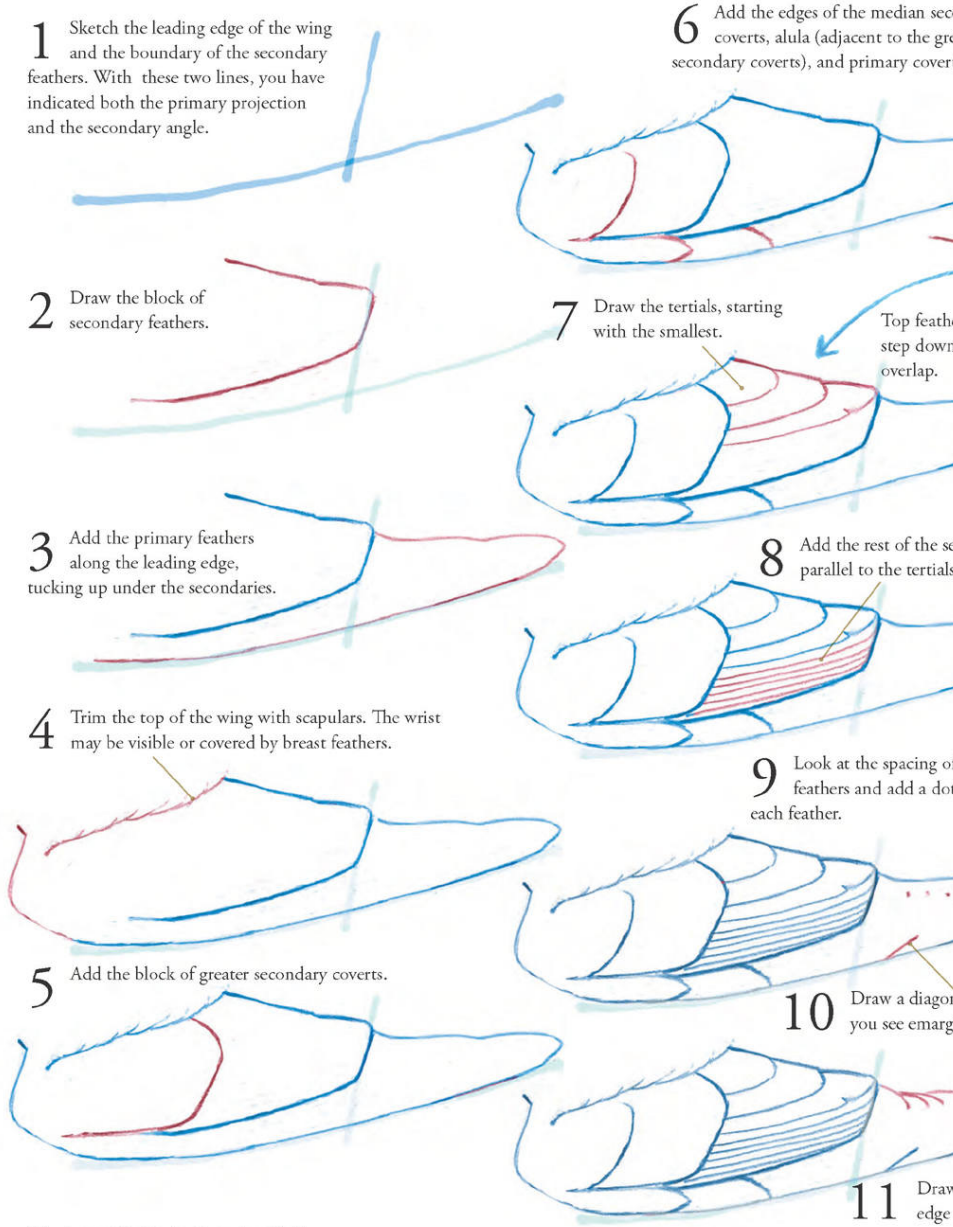
STEP BY STEP: DRAWING WINGS

When drawing the wing, start with the shapes of the feather groups. Then draw the i
feathers, starting with the topmost feather in each group.


1 Sketch the leading edge of the wing and the boundary of the secondary feathers. With these two lines, you have indicated both the primary projection and the secondary angle.
2 Draw the block of secondary feathers.
3 Add the primary feathers along the leading edge, tucking up under the secondaries.
4 Trim the top of the wing with scapulars. The wrist may be visible or covered by breast feathers.
5 Add the block of greater secondary coverts.
6 Add the edges of the median sec coverts, alula (adjacent to the gr secondary coverts), and primary cover
7 Draw the tertials, starting with the smallest.
Top feath step down overlap.
8 Add the rest of the se parallel to the tertials
9 Look at the spacing o feathers and add a do each feather.
10 Draw a diagon you see emarg
11 Draw edge

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6

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3

8

Add the rest of the secondaries parallel to the tertials.

4

Trim the top of the wing with scapulars. The wrist may be visible or covered

Look at the spacing of the primary feathers and add a dot at the tip of each f

9

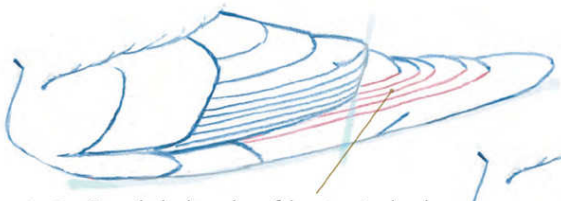
5

Add the block of greater secondary coverts.

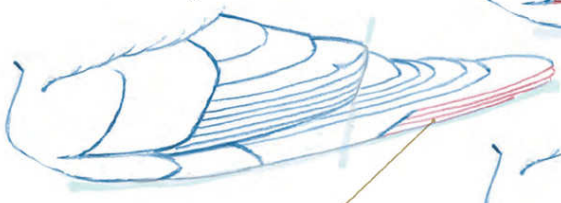
10

Draw a diagonal line where you see emargination.

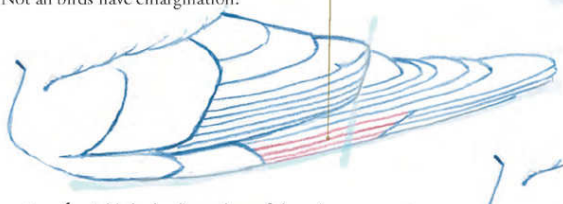
11 Draw the trailing edge of each primary.



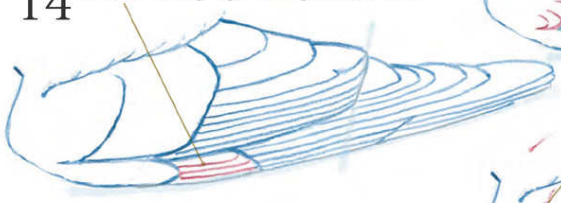
12 Draw the leading edges of the primaries that do not have emargination.



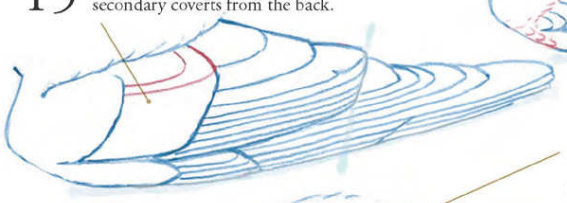
13 Draw the leading edges of the emarginated primaries, showing the small step in each feather. Not all birds have emargination.



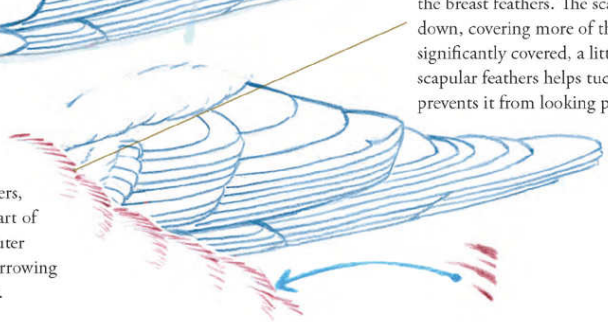
14 Add the leading edges of the primary coverts.



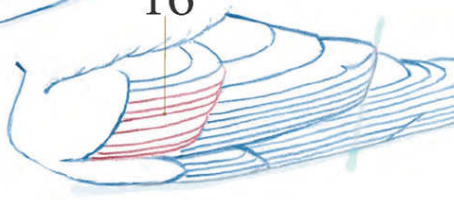
15 Start drawing the greater secondary coverts from the back.



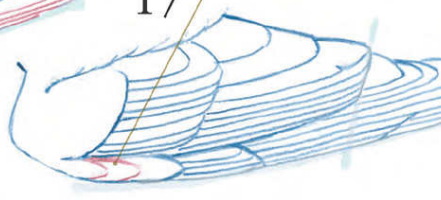
To draw fluffy feathers, make the heaviest part of your mark on the outer edge to represent narrowing cracks in the feather.



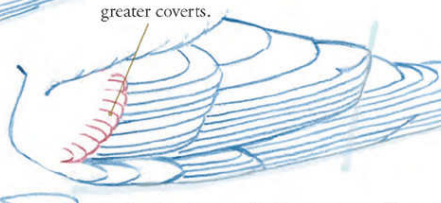
16 Add the rest of the greater second



17 Draw the alula feathers.



18 Draw the median coverts, starting edge and working your way to the that the median coverts overlap the opposite w greater coverts.



19 Suggest the lesser coverts. These ar soft and poorly defined.

20 The wrist and significant portions o edge of the wing may be completely the breast feathers. The scapular feathers may al down, covering more of the wing. Even if the w significantly covered, a little overlap with the br scapular feathers helps tuck the wing into the bi prevents it from looking pasted on.

16

Add the rest of the greater secondary coverts.

12

Draw the leading edges of the primaries that do not have emargination.

17

Draw the alula feathers.

13

Draw the leading edges of the emarginated primaries, showing the small step

Not all birds have emargination.

Draw the median coverts, starting at the leading edge and working your way

18

14

Add the leading edges of the primary coverts.

19

Suggest the lesser coverts. These are often soft and poorly defined.

15

Start drawing the greater secondary coverts from the back.

20 The wrist and significant portions of the leading edge of the wing may be
with the breast and scapular feathers helps tuck the wing into the bird and p

To draw fluffy feathers, make the heaviest part of your mark on the outer ed

TECHNICAL POINTS

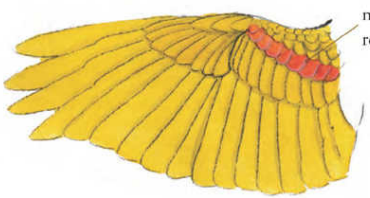
Do not be overwhelmed by detail. When you want to draw birds, just do it. If you are a careful scientific illustration, however, pay attention to the little details. The nu feathers in a wing or the way the feathers overlap will vary between types of birds.

FEATHER OVERLAP

Most feathers overlap so that a feather closer to the bird's back is on top of the next feather toward the wing tip—so if you were to walk out onto a bird's wing, the feathers would form steps going down. In many families of birds, one or more rows of median or lesser coverts are reversed so that the feathers closest to the wrist are above those closer to the body (shown in red below).

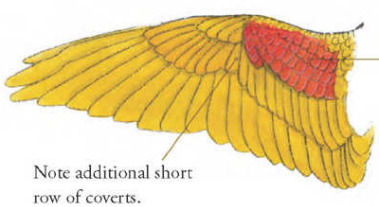
All feathers on the wings of **hummingbirds and swifts** have normal overlap and the number of coverts rows is reduced.

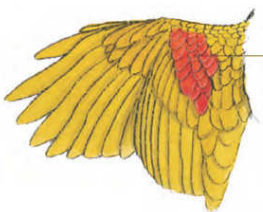
In **songbirds**, the median coverts are reversed.



Hawks, eagles, waterfowl, cormorants, herons, and parrots have a broad patch of reversed coverts.

Note additional short row of coverts.





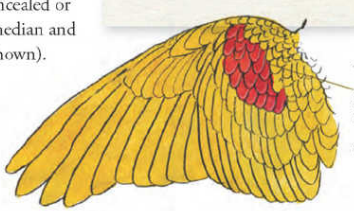
In **upland game birds, rails, and shorebirds**, only the outer 2/3 of coverts are reversed. The proximal half (closer to the body) of the greater secondary coverts are often concealed or overlapped by the median and lesser coverts (not shown).

COUNTING FEATHERS

Although the number of flight feathers in a wing wil in most illustrations, it is useful to learn the feath common orders of birds. You may be able to cou feathers in birds in flight or with spread wings. (Data and Lynch, *Manual of Ornithology*, and Pyle, *Identif to North American Birds*)

	Primaries	Secondaries
Upland Game Birds	10	12-21
Ducks, Geese, Swans	11	14-26
Woodpeckers	10	12
Trogons	10	11
Kingfishers	10	13-15
Parrots, Macaws	10	8-14
Swifts	10	7-9
Hummingbirds	10	6
Owls	10	11-17
Nighthawks	10	12-13
Pigeons, Doves	10	11-12
Cuckoos, Roadrunners	10	10-11
Cranes	11	16-18
Rails, Gallinules, Coots	10	10-13
Shorebirds	10	12-19
Gulls, Tern, Alcids	10	16-23
Hawks, Eagles, Osprey	10	13-19
Falcons, Caracaras	10	12-13
Grebes	11	17-22
Cormorants	10	17-20
Herons	10	15-19
Pelicans	10	28-33
New World Vultures	10	16f or 22g
Loons	10	22-24
Perching Birds	9-10	9

Exceptions: a. Pauraque; b. Mourning Dove; c. Anis; Jacana; e. Wilson's Snipe; f. vultures; g. condor; h. m



The coverts of **pigeon gulls** overlap like tho birds, except that onl coverts are reversed.

TECHNICAL POINTS

Do not be Overwhelmed by detail. When you want to draw birds, just do it. I
types of birds.

In songbirds, the median coverts are reversed.

FEATHER OVERLAP

Most feathers overlap so that a feather closer to the bird's back is on top of t
median or lesser coverts are reversed so that the feathers closest to the wrist

COUNTING FEATHERS

Although the number of flight feathers in a wing will not be seen in most illu
Proctor and Lynch, Manual of Ornithology, and Pyle, Identification Guide to

Primaries Secondaries Tail

Upland Game Birds 10 12-21 12-22 Ducks, Geese, Swans 11 14-26 14-24 Wo

10 11 12 Kingfishers 10 13-15 12 Parrots, Macaws 10 8-14 12 Swifts

10 7-9 10 Hummingbirds 10 6 10 Owls

10 11-17 12 Nighthawks 10 12-13 10 (12a) Pigeons, Doves 10 11-12 12 (14b

11 16-18 12

Rails, Gallinules, Coots 10 10-13 12 Shorebirds 10 12-19 12 (10d, 16e) Gulls

Falcons, Caracaras 10 12-13 12

Grebes

11 17-22 vestigial Cormorants 10 17-20 12-14 Herons

10 15-19 8-12

Pelicans

10 28-33 20-24 New World Vultures 10 16f or 22g 12-14 Loons

All feathers on the wings of hummingbirds and swifts have normal overlap a

Hawks, eagles, waterfowl, cormorants, herons, and parrots have a broad pat

Note additional short row of coverts.

In upland game birds, rails, and shorebirds, only the outer 2/3 of coverts are

10 22-24 16-20 Perching Birds 9-10 9 12 (13h)

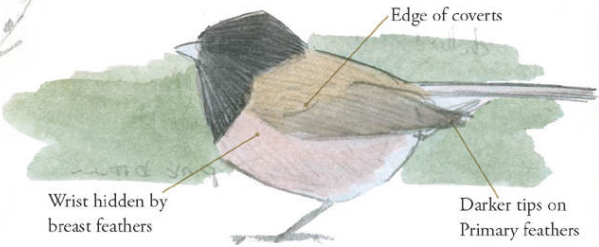
Exceptions: a. Pauraque; b. Mourning Dove; c. Anis; d. Northern Jacana; e. W

The coverts of pigeons, terns, and gulls overlap like those of game birds, exc

SUGGESTING WING DETAIL

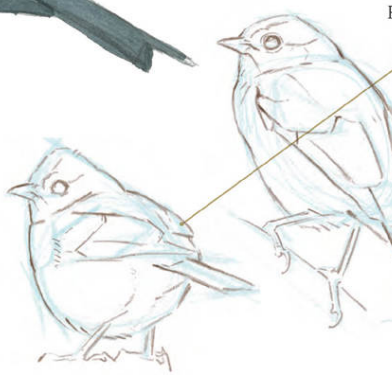
Just because you can draw every feather in the wing does not mean you should. W
are field sketching, draw what you see, instead of drawing what you *think* should
If you are too far away to see individual feathers, block in the major feather grou
draw the overall wing shape.

If a bird is too far away for you to see feather detail, you may be able to distinguish between the primary and secondary feathers. A change in angle or value can suggest primary feathers. You do not need to draw every detail, but it is important to understand the structure so your lines can suggest the underlying detail.



The form of the wing may b
against a dark body. See a v
the wing as a negative shape

The block of the secondary
feathers may form a step in
the wing shape.
A sharp change in value
below the wing suggests
strong sunlight.



Study photographs, captive birds, and birds in the fie
sense for how the wing on the far side of the body for
changes shape at different angles. Practice these shape
feel confident drawing them.

SUGGESTING WING DETAIL

Just because you can draw every feather in the wing does not mean you shou
feather groups, or just draw the overall wing shape.

No detail, just the wing shape

If a bird is too far away for you to see feather detail, you may be able to dist
understand the structure so your lines can suggest the underlying detail.

Edge of coverts

Wrist hidden by breast feathers

Darker tips on Primary feathers

The block of the secondary feathers may form a step in the wing shape.

A sharp change in value below the wing suggests strong sunlight.

The form of the wing may be obscured against a dark body. See a white patc

Far side wing

Note the subtle hint of the edge of the scapular feathers on the back.

Study photographs, captive birds, and birds in the field to get a sense for hov

TAIL SHAPE AND STRUCTURE

Tail feathers overlap so that the middle feathers are on the top of the stack of feat
relative lengths of the tail feathers make characteristic shapes.

When viewed from above, tail feathers are seen to overlap with the central feathers on top.

If the feathers are roughly the same length, the tail will be flat or gently curved.

When viewed from below, tail feathers are seen to overlap with the outside feathers on top.

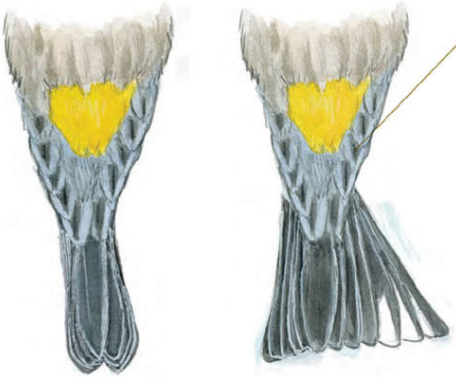
If the central feathers are longer, the tail is rounded or wedge-shaped.

Songbirds have 12 tail feathers (6 on each side).

The tail will appear to fa
point inside the body. Th
location of the stub bone
that supports the tail.

If the outside feathers are long
the tail is forked. When the tai
folded, it looks pointed.

When the tail closes, the feathers fold into a narrow pile. As the tail opens, it fans from a point within the mass of the body feathers.



Uppertail coverts cover the base of the tail on the top. These feathers may be slightly better defined than the rump feathers and may show as an overlapping row on either side of the tail.

The undertail coverts cover the base of the tail on the underside. Undertail coverts are often longer than the uppertail coverts.

From above, you will see the central feathers on a folded tail.

From below, you will see the outer feathers on a folded tail.

Side view: tail feathers may be held tightly compacted or loosely open.

You can ofte
and the bott
in the same v

TAIL SHAPE AND STRUCTURE

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The tail will appear to fan from a point inside the body. This is the location o

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From above, you will see the central feathers on a folded tail.

From below, you will see the outer feathers on a folded tail.

Side view: tail feathers may be held tightly compacted or loosely open.

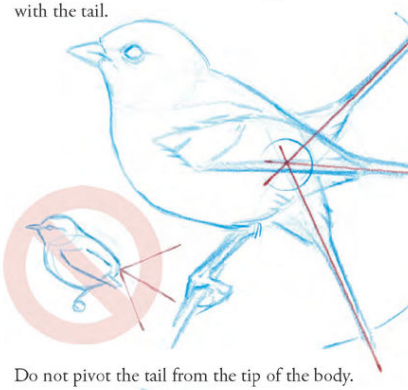
You can often see the top and the bottom of the tail in the same view.

MOVING AND FORESHORTENING TAILS

Tail feathers attach to a mobile, fleshy stump at the base of the body. The tail feat
turn, spread, or move up or down as a group. The upper and undertail coverts ma
above and below the tail, blending the tail insertion into the rest of the body.

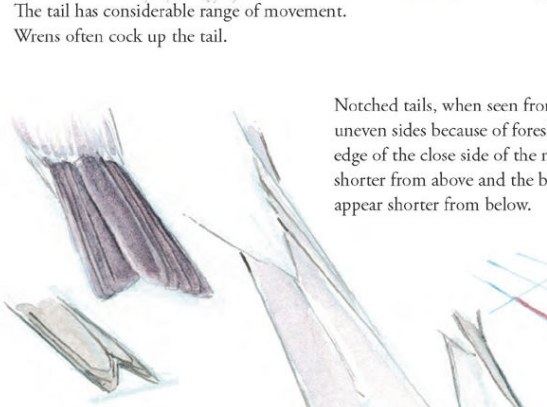
The tail has considerable range of movement. Wrens often cock up the tail.

The axis of rotation of the tail begins inside the body,
rear and above the midline. The upper and lower tail
with the tail.

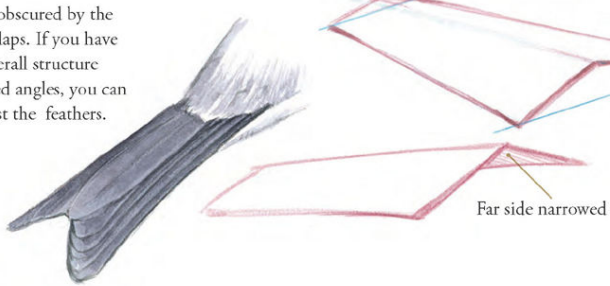


Do not pivot the tail from the tip of the body.

Notched tails, when seen from an angle, have uneven sides because of foreshortening. The back edge of the close side of the notch will appear shorter from above and the base of the far side will appear shorter from below.



You will not always see every feather in a tail, because some feathers may be obscured by the way the tail overlaps. If you have a sense of the overall structure and foreshortened angles, you can accurately suggest the feathers.



Back edges
tails appear
uneven leng
viewed fron

Far side narrowed

Tails that are slightly
from feather overlap
to be narrow on the

Far side narrowed

MOVING AND FORESHORTENING TAILS

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You will not always see every feather in a tail, because some feathers may be

Back edges of notched tails appear to be of uneven lengths when viewed fron

Far side narrowed

Tails that are slightly tented from feather overlap will appear to be narrow o

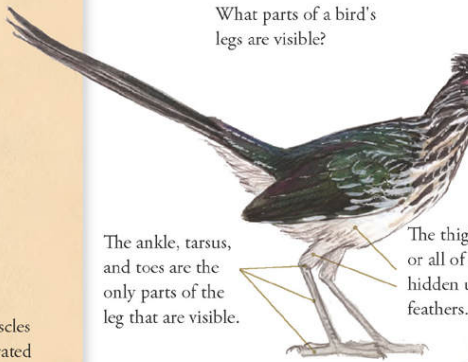
Far side narrowed

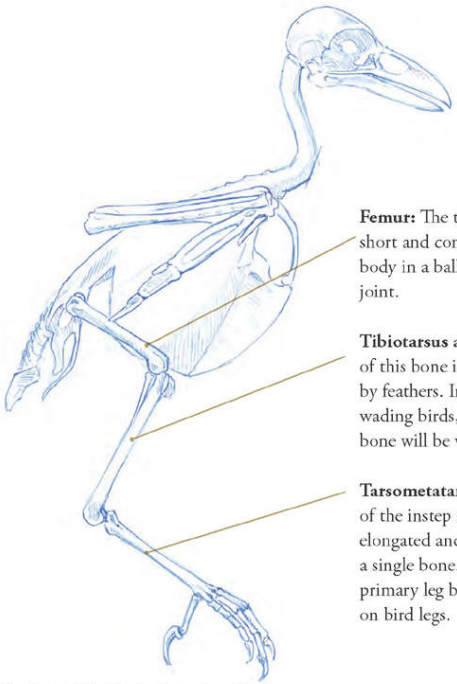
THE THIGH BONE'S CONNECTED TO THE…

Birds have the same basic leg structure as humans. The joints and bones in a bird arranged the same as in a human leg but most of the limb is hidden by feathers.

UNDER THE FEATHERS
The thigh is largely connected to the body with skin (think of the thigh of a turkey).
The calf muscles are concentrated at the end closest to the body (drumstick).
The ankle joint may be visible below the body but is often concealed by feathers.

What parts of a bird's legs are visible?





Femur: The thigh bone is short and connects to the body in a ball-and-socket joint.

Tibiotarsus and fibula: Most of this bone is usually hidden by feathers. In long-legged wading birds, more of the bone will be visible.

Tarsometatarsus: The bones of the instep and ankle are elongated and fused into a single bone. This is the primary leg bone you can see on bird legs.

The toes (usually f
from the tarsus. M
have three forward
back, but there are
such as this stilt.

THE THIGH BONE'S CONNECTED TO THE…

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The calf muscles are concentrated at the end closest to the body

(drumstick).

What parts of a bird's legs are visible?

UNDER THE FEATHERS

The thigh is largely connected to the body with skin (think of the thigh of a

The ankle, tarsus, and toes are the only parts of the leg that are visible.

The thigh and most or all of the calf are hidden under the feathers.

The ankle joint may be visible below the body but is often concealed by feat

Femur: The thigh bone is short and connects to the body in a ball-and-socket

Tibiotarsus and fibula: Most of this bone is usually hidden by feathers. In lon

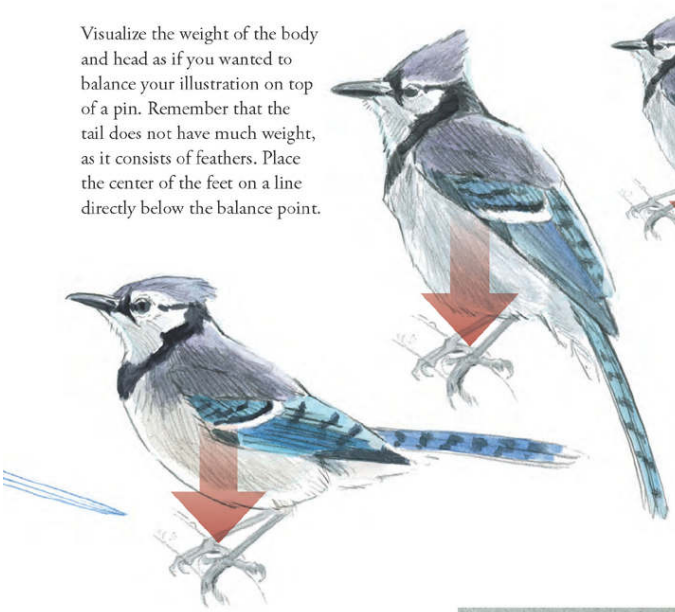
Tarsometatarsus: The bones of the instep and ankle are elongated and fused

The toes (usually four) extend from the tarsus. Most birds have three forward

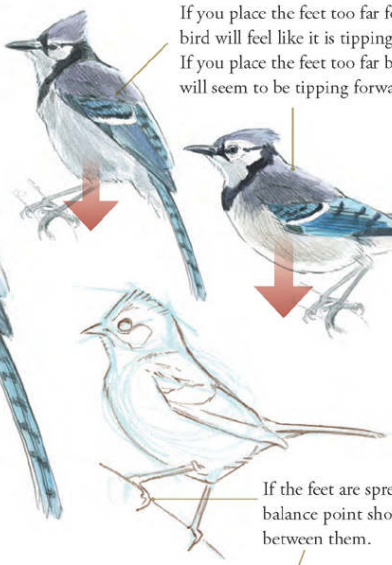
HOW TO BALANCE YOUR BIRDS

Birds at rest center their body weight above their feet.

Visualize the weight of the body and head as if you wanted to balance your illustration on top of a pin. Remember that the tail does not have much weight, as it consists of feathers. Place the center of the feet on a line directly below the balance point.

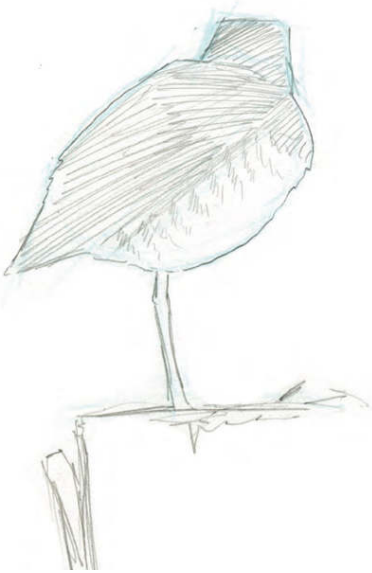


If you place the feet too far f
bird will feel like it is tipping
If you place the feet too far b
will seem to be tipping forwa



If the feet are spre
balance point sho
between them.

It may help to draw the bird first, find the balance point, then add the legs and lastly the branch. If you draw the branch first you may have to stretch the legs to an unnatural position for them to reach it.



Birds are not always balanced. Some birds may cling to vertical surfaces o
upside down as they feed. In these positions birds cling with their strong
they rest, they center their weight over their feet.

HOW TO BALANCE YOUR BIRDS

Birds at rest center their body weight above their feet.

If you place the feet too far forward, the bird will feel like it is tipping backw

If the feet are spread, the balance point should fall between them.

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It may help to draw the bird first, find the balance point, then add the legs a

Birds are not always balanced. Some birds may cling to vertical surfaces or e

UNDERSTANDING BIRD FEET

Many bird artists are afraid of drawing feet. Some handle this by hiding the feet l conveniently placed leaf. Take some time to overcome foot phobia and you will b pose birds more easily and draw what you see.

COUNT THE TOE BONES

Each toe in the bird foot has a different number of bones (and consequently joints): one bone in the back toe, and then (from inside out) two, three, and four. How does this look in a drawing? The back toe (one bone) can never curl around a twig. The inner toe has one joint and will not wrap around a branch as closely as the outside toe with three joints.

TOE ORIENTATION

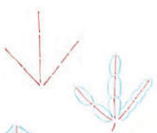
Bird toes can be arranged in different ways. If the detail of individual toes is visible in your drawing, make sure the toes point the right way.

3 forward, 1 back: bitterns, herons, egrets, ibises, vultures, eagles, hawks, falcons, moorhens, doves, flycatchers, shrikes, vireos, jays, nutcrackers, magpies, crows, ravens, larks, swallows, titmice, creepers, nuthatches, wrens, dippers, kinglets, gnatcatchers, thrushes, mimics, thrashers, starlings, pipits, waxwings, warblers, tanagers, towhees, sparrows, longspurs, buntings, cardinals, bobolinks, meadowlarks, blackbirds, grackles, cowbirds, orioles, and finches.

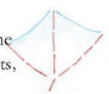
3 forward, 1 back, toes 2 and 3 fused: kingfishers and hornbills.

3 forward, 1 back, webbed: boobies, gannets, pelicans, and cormorants. The fourth toe is long.

3 forward (back toe missing or reduced to a vestigial stub): pheasants, turkeys, grouse, ptarmigan, quail, rails, coots, cranes, plovers, oystercatchers, stilts, sandpipers, phalaropes, and three-toed woodpeckers.



3 forward, webbed (toes 2 and 4 the same length): loons, swans, geese, ducks, avocets, gulls, terns.

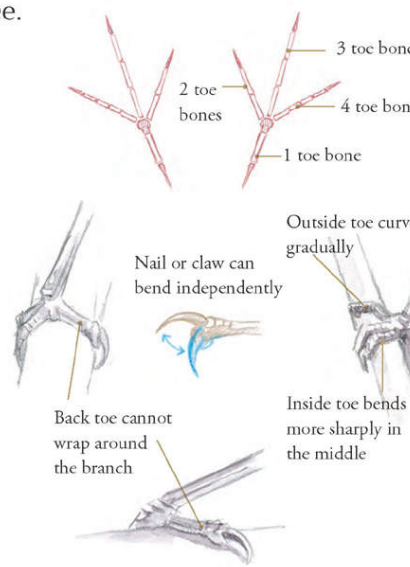


Coots and grebes

2 forward, 2 back: ospreys, woodpeckers, cuckoos, roadrunners, parrots, and owls.

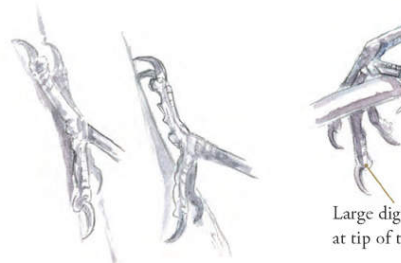
Trogons

4 forward: swifts.

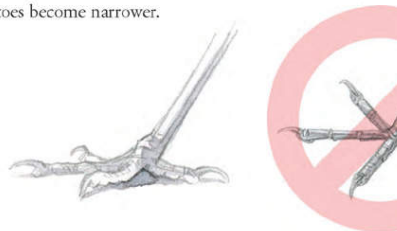

Nail or claw can bend independently
Outside toe curv gradually
Back toe cannot wrap around the branch
Inside toe bends more sharply in the middle

When not balanced on a branch, a bird can tightly grip it and dig in with its claws.

Or a bird may loosel the branch, relying instead of grip. The as the bird bends its



When drawing a foot from the side, avoid splaying the what you see instead of how you know the foot "shoul you view the bird's foot closer to eye level, the angles b toes become narrower.



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2 toe bones

3 toe bones

4 toe bones

Nail or claw can bend independently 1 toe bone

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3 forward, 1 back, toes 2 and 3 fused: kingfishers and hornbills.

3 forward, 1 back, webbed: boobies, gannets, pelicans, and cormorants. The

3 forward (back toe missing or reduced to a vestigial stub): pheasants, turkey

3 forward, webbed (toes 2 and 4 the same length): loons, swans, geese, duck

2 forward, 2 back: ospreys, woodpeckers, cuckoos, roadrunners, parrots, and

4 forward: swifts.

Back toe cannot wrap around the branch Outside toe curves gradually Inside

When not balanced on a branch, a bird can tightly grip it and dig in with its

Large digital pad at tip of toe

Coots and grebes

When drawing a foot from the side, avoid splaying the toes. Draw what you

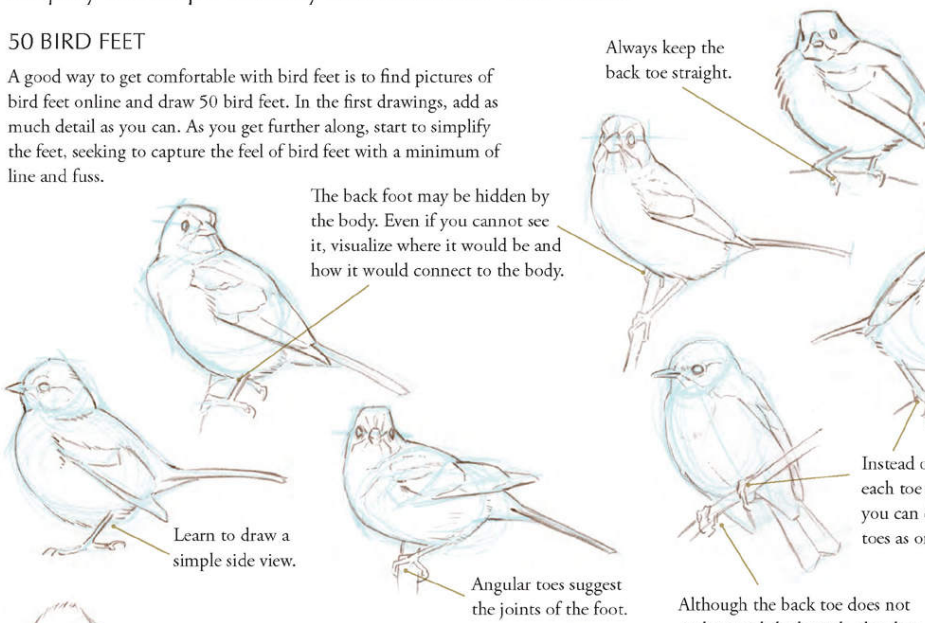
Trogons

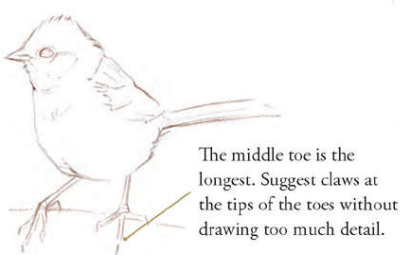
SIMPLIFYING BIRD FEET

Once you learn the structure of bird feet, it is easy to overwork them. If your
handled lightly and loosely, draw the feet the same way. If your drawing is highly
then add more detail to the feet. Familiarity with the structure of the foot will allo
simplify the shape in a way that still reads "bird's foot."

50 BIRD FEET

A good way to get comfortable with bird feet is to find pictures of bird feet online and draw 50 bird feet. In the first drawings, add as much detail as you can. As you get further along, start to simplify the feet, seeking to capture the feel of bird feet with a minimum of line and fuss.


Always keep the back toe straight.
The back foot may be hidden by the body. Even if you cannot see it, visualize where it would be and how it would connect to the body.
Learn to draw a simple side view.
Angular toes suggest the joints of the foot.
Although the back toe does not curl around the branch, the claw can pivot forward.



Now take your new understanding of bird feet into the field. If you cannot see a bird's foot, do not draw it. However, when the foot is in sight, look at it carefully and simplify the shape. If certain details are not visible from this range, leave them out of your picture. Let your lines suggest your understanding of the structure without the need to show everything you know.

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your picture. Let your lines suggest your understanding of the structure with

Instead of drawing each toe separately, you can draw adjacent toes as one sh

Although the back toe does not curl around the branch, the claw can pivot fo

Angular toes suggest the joints of the foot.

The middle toe is the longest. Suggest claws at the tips of the toes without dr

LEG POSITION AND ANGLE

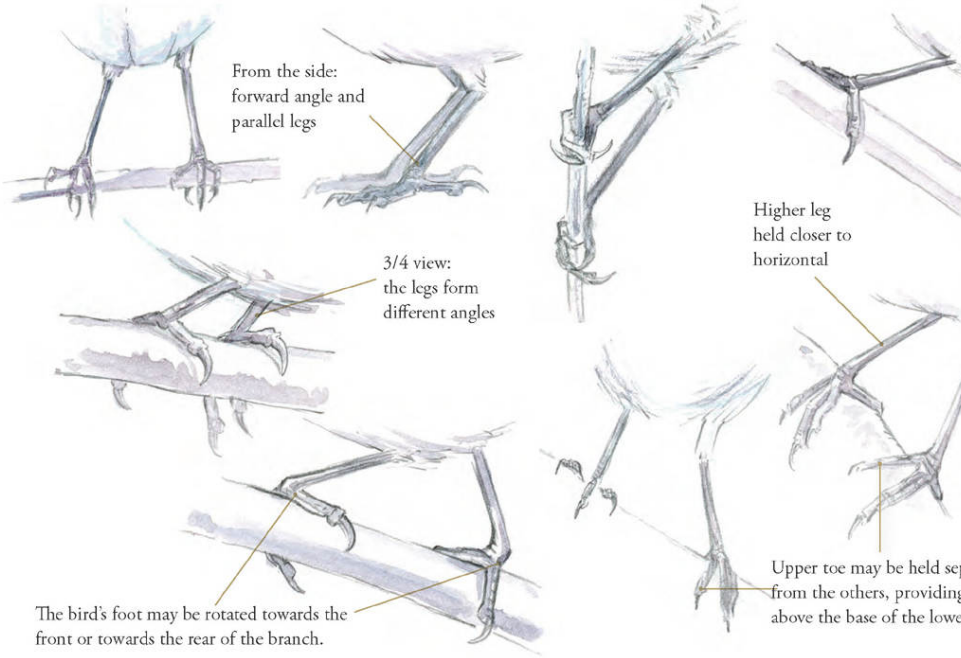
The lower leg bones emerge at a forward angle. Each leg may be held at a differe

BIRD ON A HORIZONTAL SURFACE

From the front, songbird legs are slightly splayed. When viewed from the side, the legs are parallel. However, if the bird perches at an angle to the viewer, the legs appear to be at different angles.

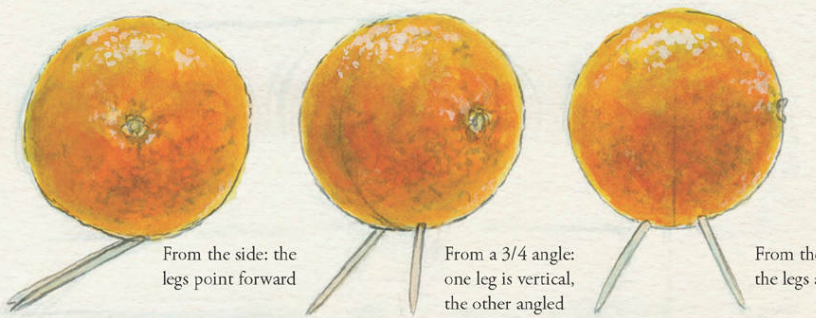
BIRD ON AN ANGLED SURFACE

If a bird is perched on an angled branch or rock, the h be held more horizontally and the lower leg more verti



MAKE A BIRD-LEG MODEL WITH AN ORANGE AND TOOTHPICKS

To help develop an intuitive sense of leg foreshortening, push two toothpicks at a steep angle into an orange so that they n V-shaped angle between them. Now rotate the orange and watch how foreshortening appears on bird legs.



LEG POSITION AND ANGLE

The lower leg bones emerge at a forward angle. Each leg may be held at a di

BIRD ON A HORIZONTAL SURFACE

From the front, songbird legs are slightly splayed. When viewed from the sid

BIRD ON AN ANGLED SURFACE

If a bird is perched on an angled branch or rock, the higher leg will be held r

From the side: forward angle and parallel legs

Higher leg held closer to horizontal

3/4 view: the legs form different angles

Upper toe may be held separately from the others, providing a “hook” above

The bird’s foot may be rotated towards the front or towards the rear of the b

MAKE A BIRD-LEG MODEL WITH AN ORANGE AND TOOTHPICKS

To help develop an intuitive sense of leg foreshortening, push two toothpicks

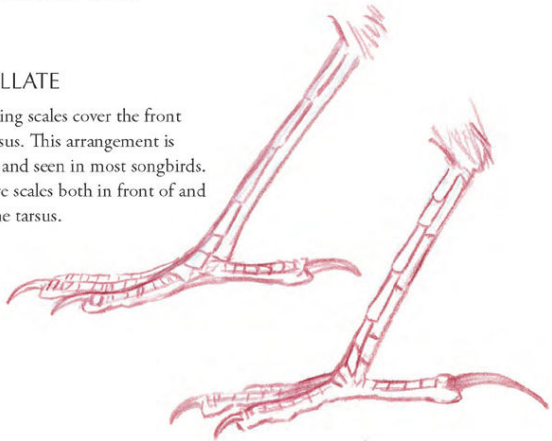
From the side: the legs point forward

From a 3/4 angle: one leg is vertical, the other angled

From the front: the legs are splayed

BIRD LEG DETAILS

Just as birds' feet show tremendous variation, so does the visible part of the le
If your drawing is detailed enough to show details of the feet, consideration of t
warranted as well.

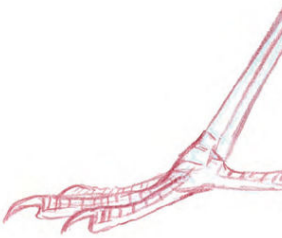


SCUTELLATE

Overlapping scales cover the front of the tarsus. This arrangement is common and seen in most songbirds. Larks have scales both in front of and behind the tarsus.

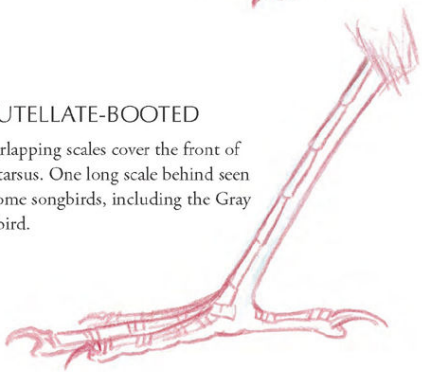
BOOTED

Long, continuous plates without scales. Found in thrushes (bluebirds, robins, etc.).



RETICULATE

Tarsus covered with sm
pebble-like bumps. Fo
and falcons.

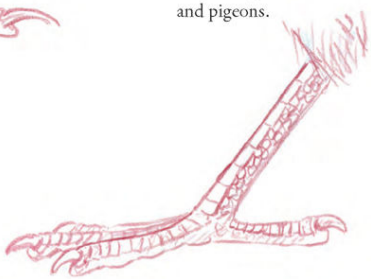


SCUTELLATE-BOOTED

Overlapping scales cover the front of the tarsus. One long scale behind seen in some songbirds, including the Gray Catbird.

SCUTELLATE-RETICULATE

Overlapping scales cover the front of the tarsus. Irregular plates behind. This arrangement is found in doves and pigeons.



FEATHERED

Some birds, including grouse and some hawks, have feathers covering the tarsus. In ptarmigan, the tarsus and toes are covered in feathers.

BIRD LEG DETAILS

Just as birds' feet show tremendous variation, so does the visible part of the

SCUTELLATE

Overlapping scales cover the front of the tarsus. This arrangement is commo

SCUTELLATE-BOOTED

Overlapping scales cover the front of the tarsus. One long scale behind seen

BOOTED

Long, continuous plates without scales. Found in thrushes (bluebirds, robins,

SCUTELLATE-RETICULATE

Overlapping scales cover the front of the tarsus. Irregular plates behind. This

RETICULATE

Tarsus covered with small, irregular, pebble-like bumps. Found in plovers an

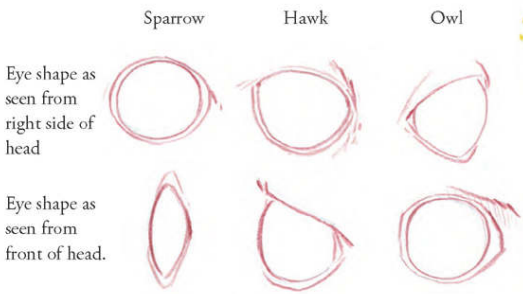
FEATHERED

Some birds, including grouse and some hawks, have feathers covering the ta

WINDOWS OF THE SOUL

Eyes are one of the first things people notice when they scan an illustration. Givi extra attention here will pay off. But beware of overemphasizing the eyes. Som suggestion is all you need.

The shape of the eye will change as a bird turns its head. Sparrow eyes look round from the side and elliptical from the front. The opposite is true of owls. Hawks are somewhere in between. The plane of the cheek also varies in the same way.



Think of the eye as three parts: the colored iris, the pupi highlight that makes the eye look wet and alive.

The color of the iris is an important field mark. It will vary between species and in some cases will change with age.

The pupil is almost always round but the contracted pupils of fowl may be ovals. A round pupil will look oval when it is viewed from an angle. Birds can control the dilation of their pupils. The pupils may also dilate independently. If one eye is in shadow, the pupil will look larger than the one in direct light.

Eyes reflect the light source that illuminates them. An eye in direct sunlight will reflect the sun and the sky above. Be sure to draw the highlight on the correct side of the eye, so that it is oriented with the rest of the light and shadows in the picture.

If the day is overcast or the bird is in shadow, as in a deep forest, the reflected light on the eye will be reduced or absent.

When the eye closes to sleep, the lower eyelid moves u bird blinks, the upper lid moves. Bird eyes are also p transparent nictitating membrane that can flick across the inside corner, moving upwards and back.

Because our att so drawn to the easily exaggerat in our sketches, them either too overworked and Keep it simple

Sometimes it see the eye. You out if you cann

WINDOWS OF THE SOUL

Eyes are one of the first things people notice when they scan an illustration.

The shape of the eye will change as a bird turns its head. Sparrow eyes look

Sparrow Hawk Owl

Eye shape as seen from right side of head

Eye shape as seen from front of head.

Highlight

Pupil

The color of the iris is an important field mark. It will vary between species a

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Iris

When the eye closes to sleep, the lower eyelid moves up. When the bird blin

Because our attention is so drawn to the eyes, we easily exaggerate them in

Sometimes it is difficult to see the eye. You can leave it out if you cannot see

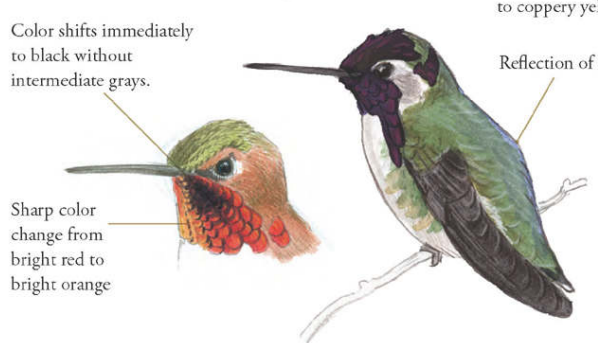
IRIDESCENCE

Feathers iridesce because of the microscopic structure of feather barbules. When is not angled toward a viewer to reflect light, it appears dark. The secret to painti cence is to put pure color adjacent to black.

Undercoat of bright Phthalo Blue that blends into a strong purple.
Undercoat of green that blends into yellow-green on the breast
Topcoat of Payne's Gray, applied with a dry-brush to suggest feather edges and fluffiness
Shadows carefully drawn in with Payne's Grey (a deep black-blue color) using a pointed brush

When painting iridescence, start with a the bright iridescent color. Let it chang high-intensity color in the highlighted a highlights do not lighten but rather blend brilliant hue. Once this coat is dry, start t dark paint, leaving a fairly abrupt edge bet and the shadow (instead of a gradual transi way to handle iridescence is to paint a dark highlight it with bright colored pencils on completely dry.

Light and dark areas will change depending on how the feathers are oriented to the viewer. Even a gorget (the iridescent patch on a hummingbird's throat) that reflects back light will often look dark in some areas. You often see shadows of individual feathers adjacent to the darkest shadow areas. A change in light direction, viewer angle, or the position of the bird will dramatically change how you see the iridescence. To see the brightest colors, position yourself so that the sun is at your back as you look at the bird.


Color shifts immediately to black without intermediate grays.
Reflection of sky
Sharp color change from bright red to bright orange

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completely dry.

Shadows carefully drawn in with Payne's Grey (a deep black-blue color) usin

Texture and pale feather edges added by applying white colored pencil Unde

Light and dark areas will change depending on how the feathers are oriented
feathers adjacent to the darkest shadow areas. A change in light direction, vi
look at the bird.

Green areas may shade to coppery yellow

Color shifts immediately to black without intermediate grays.

Reflection of sky

Sharp color change from bright red to bright orange

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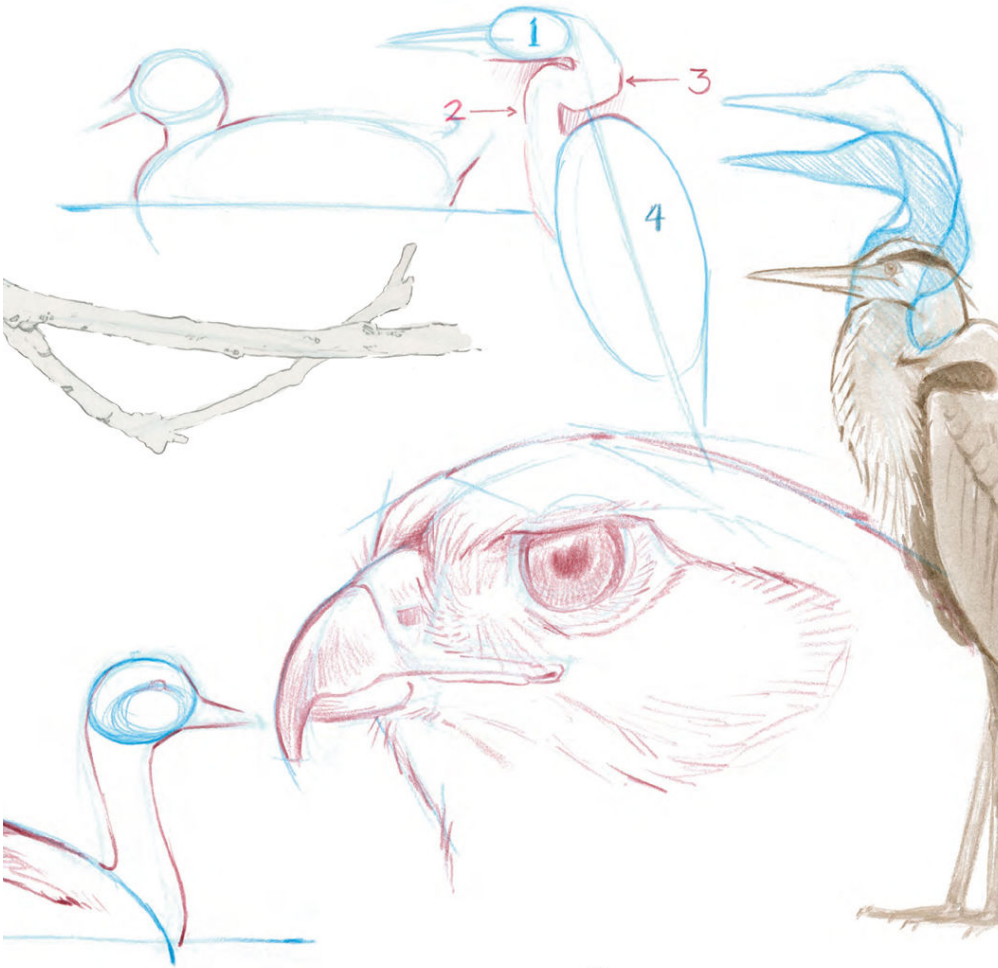
Details and Tips for Common Birds

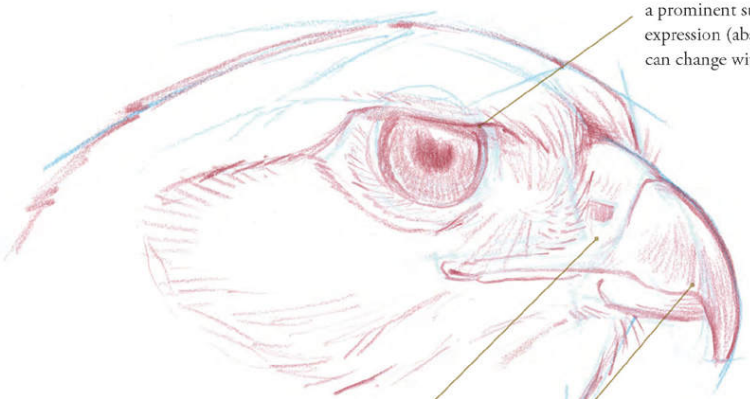


BIRDS OF PREY

Birds of prey, or raptors, have distinctive facial and body features. The prominent ridge over the eye give an intensity to their expression.

Raptor eyes are set far forward and are often
a prominent supraorbital ridge that gives the
expression (absent in Ospreys and some kites)
can change with age.

Proportions are important. Ke
and eagles have different relati
Also note that the proportio
relative to the head are diff
these species. The kestrel ha
and small bill, while the Golde
small head and large bill. Gen
with small bodies will have pr
large heads.

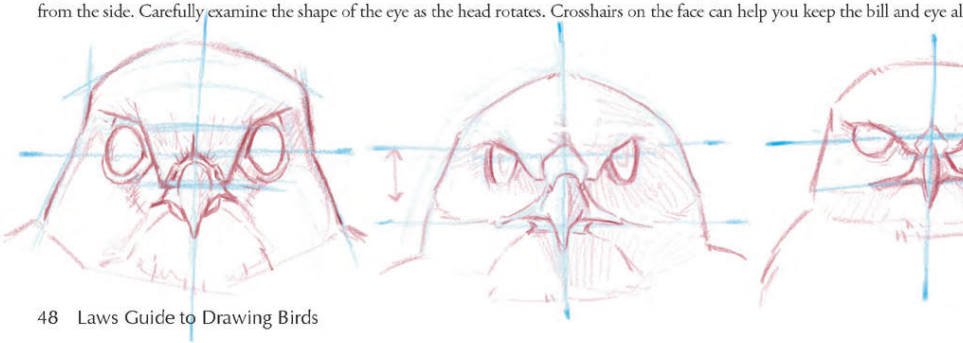


Hawks and eagles have strongly hooked bills for tearing flesh. The cere (back of the bill and gape) is covered with tissue and is often bright yellow. This region can change color as the bird ages.

Your attention will be drawn to and held by the hooked bill, hooded eye, and strong talons. Consequently, it is easy to exaggerate these features in your drawing. This will make your drawing cartoonish. Some raptors (such as Bald Eagles) do have large bills, but I find I often need to pause and make raptor bills smaller.

Raptor heads are often blocky and angular. Look for the angles on the side of the head turned away from you.

Raptor eyes face forward. Owl eyes are more forward-directed than hawk eyes. Forward-facing eyes are rounder from the front and
from the side. Carefully examine the shape of the eye as the head rotates. Crosshairs on the face can help you keep the bill and eye al



BIRDS OF PREY

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Proportions are important. Kestrels, hawks, and eagles have different relative
has a small head and large bill. Generally, raptors with small bodies will hav

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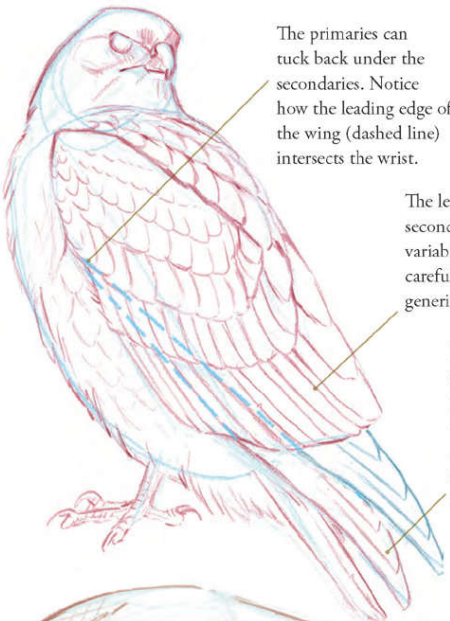
you keep the bill and eye aligned.

RAPTOR ANATOMY

While raptors are structurally very similar to each other, the proportions of head and tails vary between species and even vary between age classes.

The length of the primary feathers varies between species. They are very long in falcons and shorter in buteos. Even among buteos there is considerable variation in feather length.

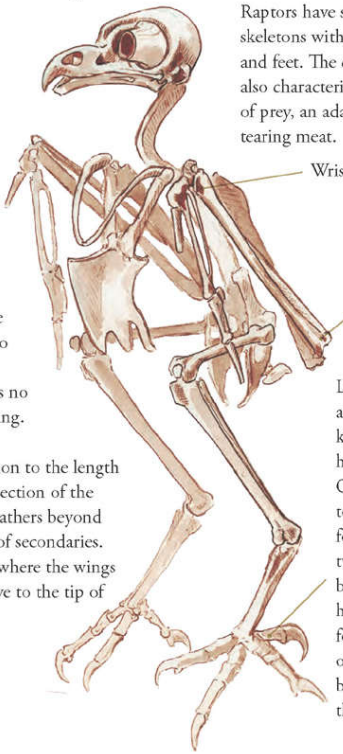


The primaries can tuck back under the secondaries. Notice how the leading edge of the wing (dashed line) intersects the wrist.

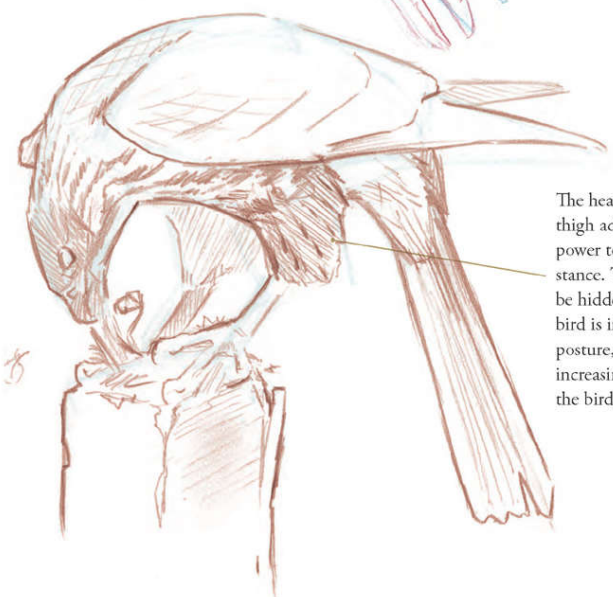
The length of the secondaries is also variable. Look carefully. There is no generic raptor wing.

Pay attention to the length of the projection of the primary feathers beyond the block of secondaries. Also note where the wings stop relative to the tip of the tail.

Raptors have s
skeletons with
and feet. The
also characteri
of prey, an ada
tearing meat.



Wris



The heavily feathered thigh adds a sense of power to the raptor's stance. The thigh may be hidden when the bird is in an upright posture, but it becomes increasingly visible as the bird leans forward.

Unlike songbirds, rap
prominent thighs. Th
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or when they prepare

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Wrist

Elbow

Pay attention to the length of the projection of the primary feathers beyond t

Raptors have strong skeletons with sturdy legs and feet. The curved beak is a

Large talons are used for killing and holding prey. Owls have two toes facing

Unlike songbirds, raptors have prominent thighs. This is visible when they di

The heavily feathered thigh adds a sense of power to the raptor's stance. The

RAPTOR BODY FEATHERS

Feather groups are often clearly defined on birds of prey. Look for shifts in feather pattern.

THE CHEST

Breast feathers form a distinctive patch on the upper chest. These may be more tightly patterned than on the sides. In birds that have recently eaten and have a full crop, you will see a prominent bulge in this area. The breast sometimes has a seam in the middle, giving the bird a double-breasted appearance.

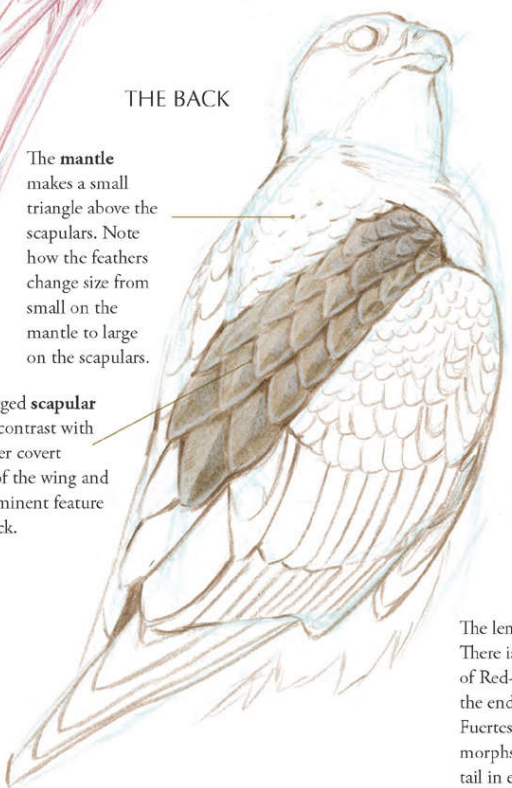
Look carefully for patterns on the large lower **flank** feathers.

The **belly** may have long shaggy feathers.

THE BACK

The **mantle** makes a small triangle above the scapulars. Note how the feathers change size from small on the mantle to large on the scapulars.

The enlarged **scapular feathers** contrast with the smaller covert feathers of the wing and are a prominent feature of the back.



Let's take a look at how some of these pro
feather group details play out in a Red-tai

Mantle

Pale scapular feathers make a "V" across the back of a Red-tailed Hawk.

The length of the wing tips varies widely. There is even variation within morphs of Red-tailed Hawk. The wing tips reach the end of the tail (shown) in western, Fuertes', dark, rufous, and Harlan's morphs, but they are shorter than the tail in eastern and Krider's morphs.

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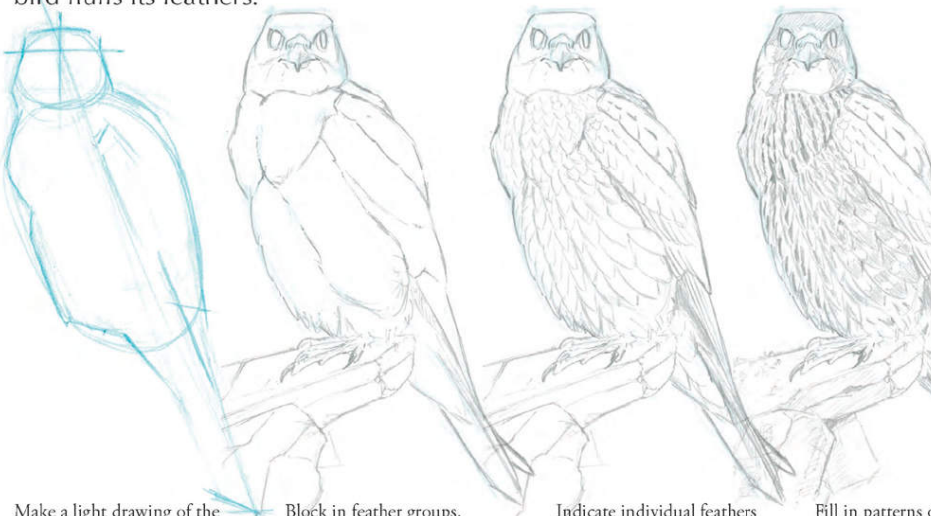
STEP BY STEP: PEREGRINE WATERCOLOR

Unlike those of songbirds, body feathers of hawks are stiff and well defined. You
be able to pick out individual feathers on the back and chest, especially when a
bird fluffs its feathers.



Make a light drawing of the posture, proportions, and angles.

Block in feather groups. Note double-breasted look.

Indicate individual feathers to show their overlap and increase in size.

Fill in patterns
feathers. The lo
have distinct pa

Paint areas of shadow, giving volume to different groups of feathers.

Paint dark patterns. Usually dark comes last but do not risk losing the details of feather markings.

Once your work is completely dry, paint the breast with a quick coat of warm brown. Paint a dark wash on the back.

Reinforce shad
details around
not overwork
you think you

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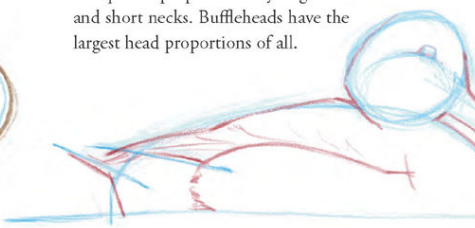
Reinforce shadows and work details around the face. Do not overwork it; sto

DRAWING WATERFOWL

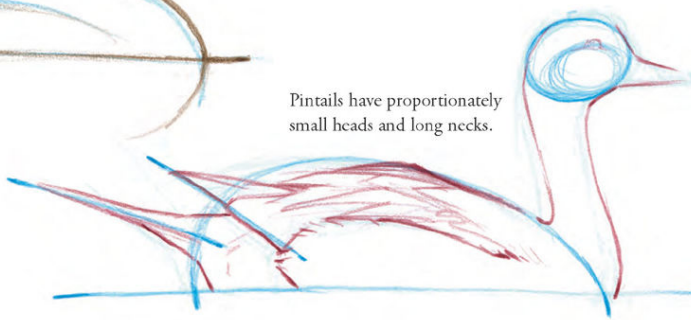
Proportions are critical for accurate waterfowl illustrations. Start with a carefully c
shape and use negative shapes to place patterns of light and dark.

Proportions of the head relative to the body and neck length will vary among species. Look carefully and use head length as a measurement tool. Even if you have the right bill, your merganser will not look right if it has Ruddy Duck proportions. The head will sit above the body instead of in front of it.

Scaup have proportionately large heads and short necks. Buffleheads have the largest head proportions of all.



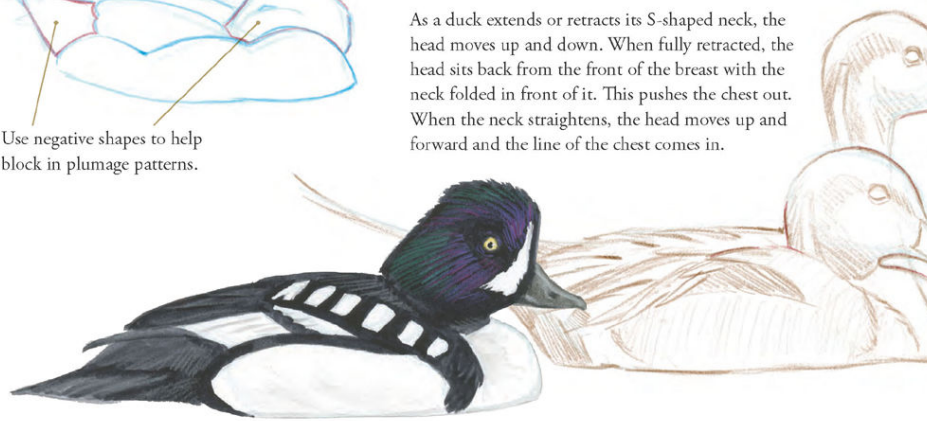
Pintails have proportionately small heads and long necks.



Recheck proportions and neck length before continuing a waterfowl drawing. Subtle shifts in these factors will radically change t
Smaller ducks tend to have proportionately large heads. Does the body sit high in the water like a Ruddy Duck or low like a n

Use negative shapes to help block in plumage patterns.

As a duck extends or retracts its S-shaped neck, the head moves up and down. When fully retracted, the head sits back from the front of the breast with the neck folded in front of it. This pushes the chest out. When the neck straightens, the head moves up and forward and the line of the chest comes in.



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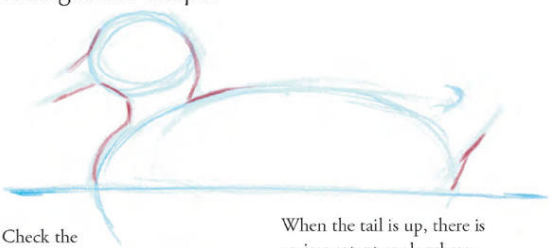
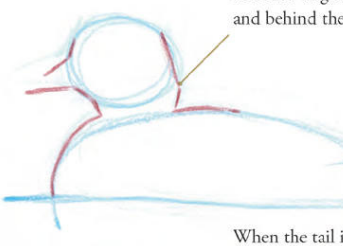
THE ANGLES OF HEADS AND TAILS

Look for important angles on the forehead, chest, and tail. Visualizing negativ can help you see the angles more clearly. Note that raising and lowering the he changes the shape.

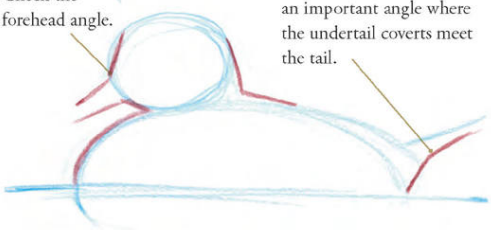


Look for angles and behind the

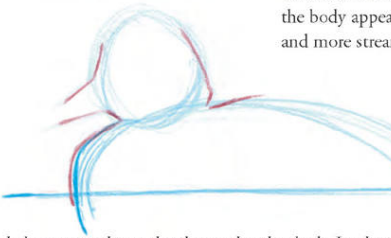


Check the forehead angle.

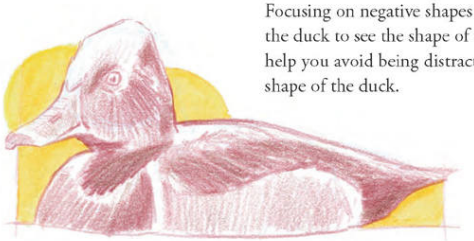
When the tail is up, there is an important angle where the undertail coverts meet the tail.



When the tail i the body appea and more strea



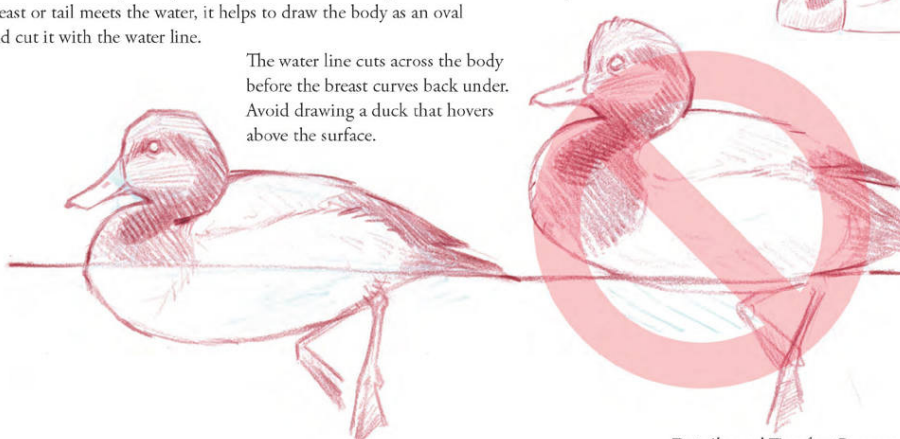
Focusing on negative shapes may help you see the angles that sculpt the duck. Look pa the duck to see the shape of the water beyond it against the edge of the body. This will help you avoid being distracted by the pattern of feathers and will allow you to see the shape of the duck.



Diving ducks that are feeding will have their heads up and tails down. When ducks are at rest, they hold their tails up out of the water and tuck their necks down. When they sleep, they turn their heads backwards and tuck their bills under their scapular feathers.

Duck bodies float partially submerged. To draw the angles as the breast or tail meets the water, it helps to draw the body as an oval and cut it with the water line.

The water line cuts across the body before the breast curves back under. Avoid drawing a duck that hovers above the surface.



THE ANGLES OF HEADS AND TAILS

Look for important angles on the forehead, chest, and tail. Visualizing negati

Look for angles in front of and behind the head.

Check the forehead angle.

When the tail is up, there is an important angle where the undertail coverts r

When the tail is down, the body appears longer and more streamlined.

Focusing on negative shapes may help you see the angles that sculpt the duc
you to see the shape of the duck.

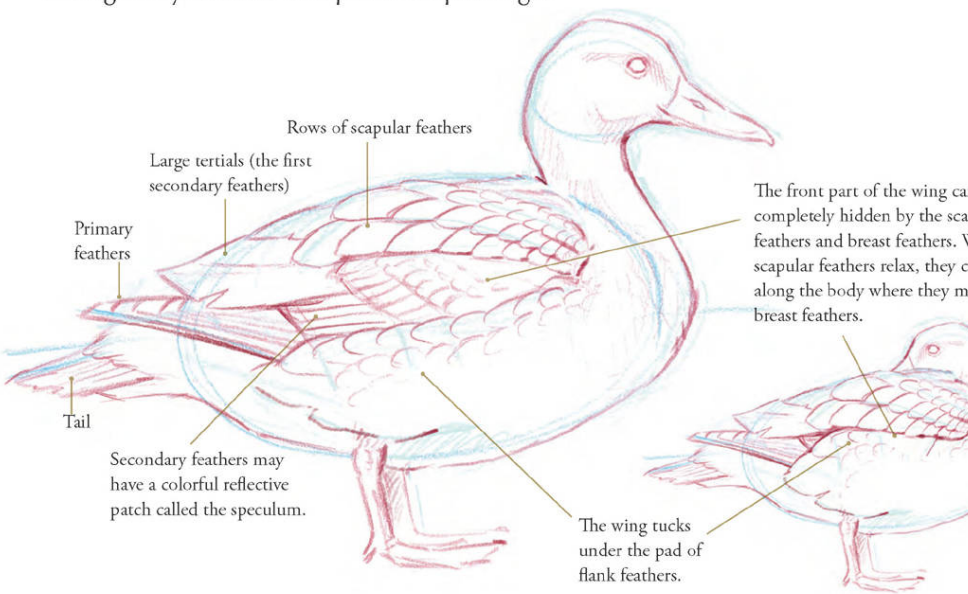
Diving ducks that are feeding will have their heads up and tails down. When
feathers.

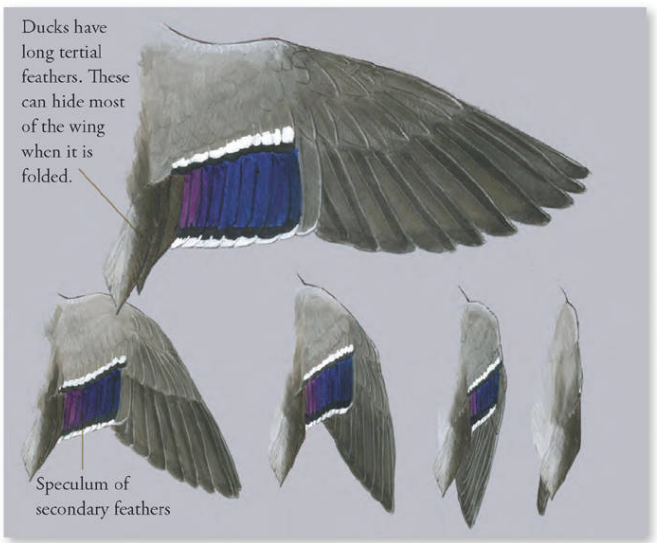
Duck bodies float partially submerged. To draw the angles as the breast or ta

The water line cuts across the body before the breast curves back under. Avo

DUCK DETAILS

To accurately draw plumage you must understand the underlying feather topogra not draw every feather. Often the edges of individual feathers will not be distinct. it is the feather groups that make patterns. Let your understanding of the feathe through as you draw and paint the plumage.


Rows of scapular feathers
Large tertials (the first secondary feathers)
Primary feathers
Tail
Secondary feathers may have a colorful reflective patch called the speculum.
The wing tucks under the pad of flank feathers.
The front part of the wing ca completely hidden by the sca feathers and breast feathers. V scapular feathers relax, they c along the body where they m breast feathers.



Even similar-looking species have differences. Note the forehead an Lesser and Greater Scaup. If you similar species together, try sketc side by side, noting as many diffe between them as you can.

DUCK DETAILS

To accurately draw plumage you must understand the underlying feather top
the feathers show through as you draw and paint the plumage.

Rows of scapular feathers

Large tertials (the first secondary feathers)

Primary feathers

The front part of the wing can be completely hidden by the scapular feathers

Tail

Secondary feathers may have a colorful reflective patch called the speculum.

Ducks have long tertial feathers. These can hide most of the wing when it is

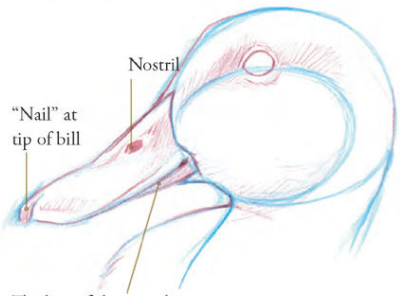
Speculum of secondary feathers

The wing tucks under the pad of flank feathers.

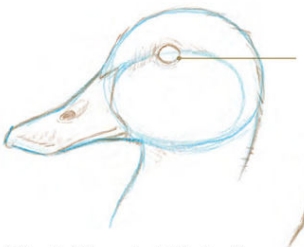
Even similar-looking species have their differences. Note the forehead angles

DUCK HEADS

Accurate placement and shape of the bill will make your duck look like a duck
emerges near the base of the head circle (instead of the middle of the head)
slopes up to the forehead.



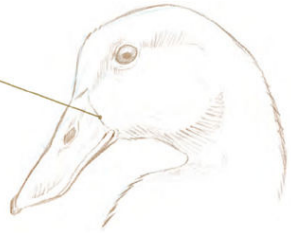
The line of the mouth is at the bottom of the bill and is overlapped by the upper bill. Ducks may have a subtle smile.



The eye
the head
large pu

Try sketching the bills of different individuals of a species in an easily observed flock, such as in a pond in a city park. After watching for a while, you will begin to pick out differences between individuals of the same species.

Look carefully at the boundary of the bill and the face. The shape of this feather edge will differ between species.



Shoveler bills look disproportionately large and will slope straight onto the forehead.

Canvasbacks have triangular bills that slope straight up onto the forehead.

Mergansers have thin straight bills with serrated teeth to help them catch fish.

Mallard bills are bro
make a sharp angle
forehead.

There is no one-size-fits-all bill. Each species is different. While duck bills share basic similarities, the size and angles of the bill will vary. Similarly, the angle from bill to forehead can be dramatically different between species. Start with a basic round head and check your proportions, carefully observing the proportions of the bill. Then study the angles on the head. You do not need to memorize these differences, but appreciate the variation among species and carefully observe the subject that you are drawing.

DUCK HEADS

Accurate placement and shape of the bill will make your duck look like a du

The eye sits high in the head on top of a large puffy cheek.

Nostril

“Nail” at tip of bill

The line of the mouth is at the bottom of the bill and is overlapped by the up

Try sketching the bills of different individuals of a species in an easily observ

Look carefully at the boundary of the bill and the face. The shape of this feat

Shoveler bills look disproportionately large and will slope straight onto the f

Canvasbacks have triangular bills that slope straight up onto the forehead.

Mergansers have thin straight bills with serrated teeth to help them catch fis

Mallard bills are broad and make a sharp angle at the forehead.

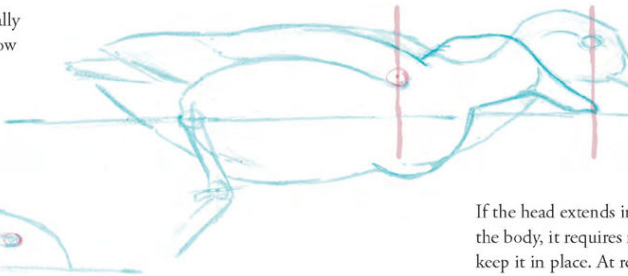
Wigeons have petite bills and steep foreheads.

There is no one-size-fits-all bill. Each species is different. While duck bills sha
head and check your proportions, carefully observing the proportions of the
are drawing.

WATERFOWL IN MOTION

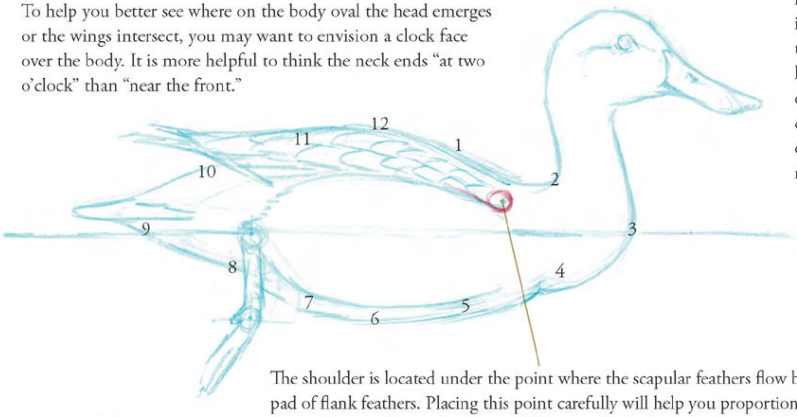
As the duck moves, use the location of the eye and the shoulder as reference Envision a vertical line through each point. What do they intersect?

Head extension and retraction dramatically change the profile of the duck. Watch how the angles around the neck change with different head positions.



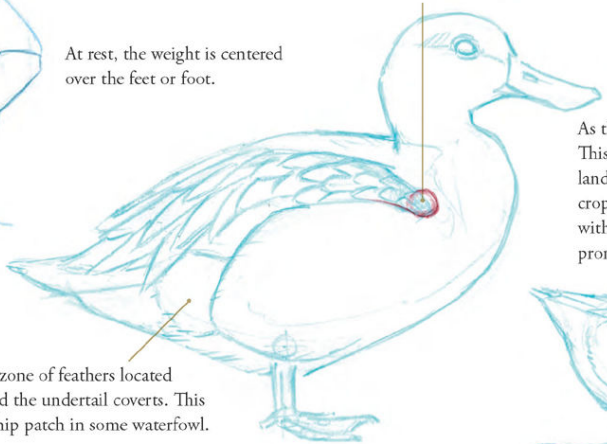
If the head extends i
the body, it requires
keep it in place. At r
moves back over the
it is supported by th
the neck vertebrae. A
leaning head gives m
of action and movem
duck, while a head p
over the body gives a
restfulness and stillne

To help you better see where on the body oval the head emerges or the wings intersect, you may want to envision a clock face over the body. It is more helpful to think the neck ends "at two o'clock" than "near the front."



The shoulder is located under the point where the scapular feathers flow back and meet the to
pad of flank feathers. Placing this point carefully will help you proportion the body feathers. If
forward, you will crowd the breast. If it is too far back, you will cramp the space for the wings.
to draw a small circle in this spot as you start to sketch, and let the feather groups flow from th

At rest, the weight is centered over the feet or foot.



As the head retracts, the
This bulge is also visible
land. Ducks have a pouch
crop, in their throats that
with grain. Watch for an
pronounced bulge on the

The femoral tract is a zone of feathers located between the flanks and the undertail coverts. This creates a large bright hip patch in some waterfowl.

As the duck moves, use the location of the eye and the shoulder as reference

Head extension and retraction dramatically change the profile of the duck. W

To help you better see where on the body oval the head emerges or the wing

If the head extends in front of the body, it requires muscles to keep it in plac
to the duck, while a head pulled back over the body gives a sense of restfuln

12

11

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The shoulder is located under the point where the scapular feathers flow bac
it is too far back, you will cramp the space for the wings. It may help to draw

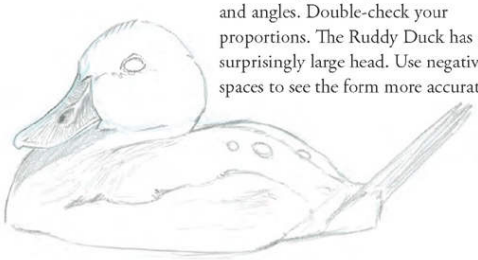
At rest, the weight is centered over the feet or foot.

The femoral tract is a zone of feathers located between the flanks and the un

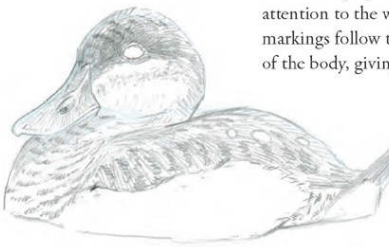
As the head retracts, the chest bulges. This bulge is also visible on ducks on l

STEP BY STEP: RUDDY DUCK

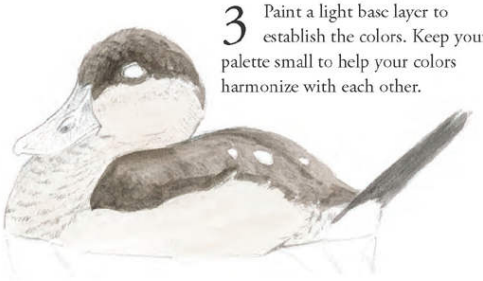
Do not think of these step-by-step birds as the only formula to follow, but as one of how one artist approaches the subject. Absorb what is useful from such demo and discard what does not work with your way of drawing or looking at birds.



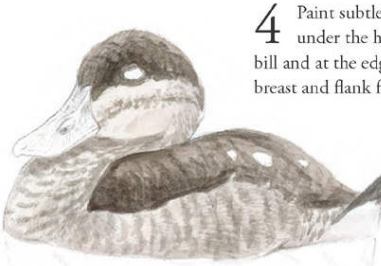
1 Draw the form of the duck, noting the proportions and angles. Double-check your proportions. The Ruddy Duck has a surprisingly large head. Use negative spaces to see the form more accurately.



2 Add texture with graphi attention to the v markings follow t of the body, givin



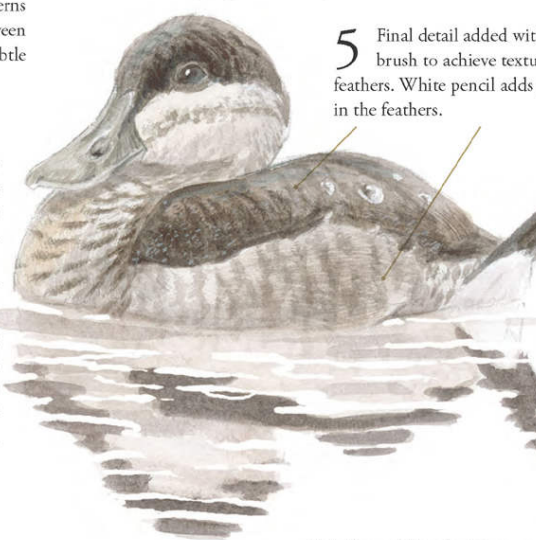
3 Paint a light base layer to establish the colors. Keep your palette small to help your colors harmonize with each other.



4 Paint subtle under the h bill and at the edg breast and flank f

As you add detail, show the contours of the body. wrapping the markings around a three-dimensiona

I love the muted browns and dappled patterns of female birds. Painting the transitions between brown and gray will help you appreciate the subtle changes in color.



5 Final detail added wit brush to achieve textu feathers. White pencil adds in the feathers.

Keep reflections simple. Remember that they are cast directly below the subject. The subject and the reflection are not mirror images of each other. Note that more of the back of the duck is visible on the actual bird than you see in the reflection.

If you find painting reflections challenging, study the work of other artists. I had a very hard time with this reflection until I spent about an hour studying how J. F. Lansdowne handled a similar subject. As an exercise, try copying the work of your favorite artists, line for line. Studying the masters will not turn your style into a clone of someone else's. You will discover new ways of drawing and seeing.

STEP BY STEP: RUDDY DUCK

Do not think of these step-by-step birds as the only formula to follow, but as
birds.

1

2

Draw the form of the duck, noting the proportions and angles. Double-check

Add texture and value with graphite. Pay attention to the way that the mark

Paint a light base layer to establish the colors. Keep your palette small to hel

3

Paint subtle shadows under the head and bill and at the edge of the breast ar

4

As you add detail, show the contours of the body. Think of wrapping the ma

I love the muted browns and dappled patterns of female birds. Painting the t

Final detail added with a splayed brush to achieve textured feathers. White p

5

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If you find painting reflections challenging, study the work of other artists. I
favorite artists, line for line. Studying the masters will not turn your style int

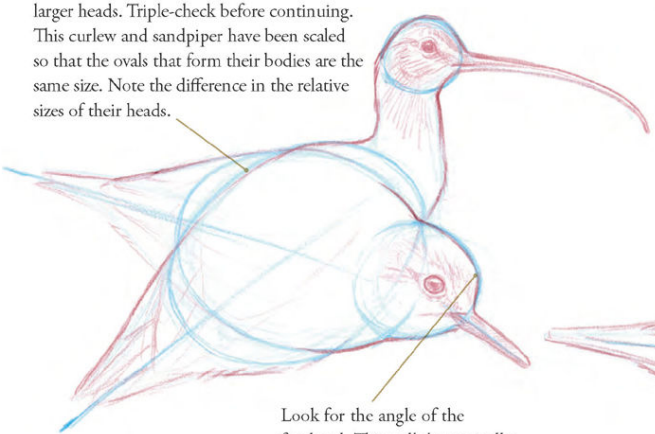
WORKING WITH WADERS

Shorebirds are cooperative models as they forage along open beaches and mars not be intimidated by their intricate markings. At most distances, these patterns bl smooth tones.

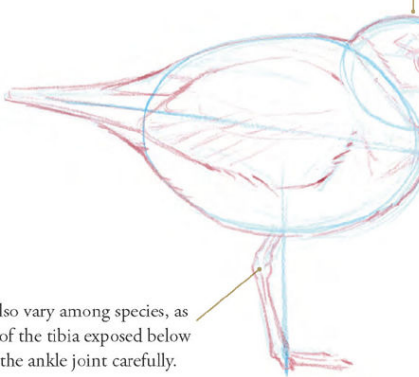
Posture will change as the bird feeds, walks, or rests. You will notice subtle changes in posture even among similar species. Start with the posture line and build the rest of the drawing around it.

A bird resting on one leg will position that leg at an an the foot rests on the ground directly below the bird's ce gravity. This is seen from both the front and the side vi

Proportions are critical here. A subtle shift in head size will make a drawing look like a different species. Smaller birds tend to have larger heads. Triple-check before continuing. This curlew and sandpiper have been scaled so that the ovals that form their bodies are the same size. Note the difference in the relative sizes of their heads.



Carefully observe the pr of the eye relative to the head. The eye will be re in smaller birds.



Look for the angle of the forehead. This will dramatically change the expression and feeling of your illustration.

Leg length will also vary among species, as will the amount of the tibia exposed below the breast. Place the ankle joint carefully.

Shorebirds are cooperative models as they forage along open beaches and ma

Posture will change as the bird feeds, walks, or rests. You will notice subtle c

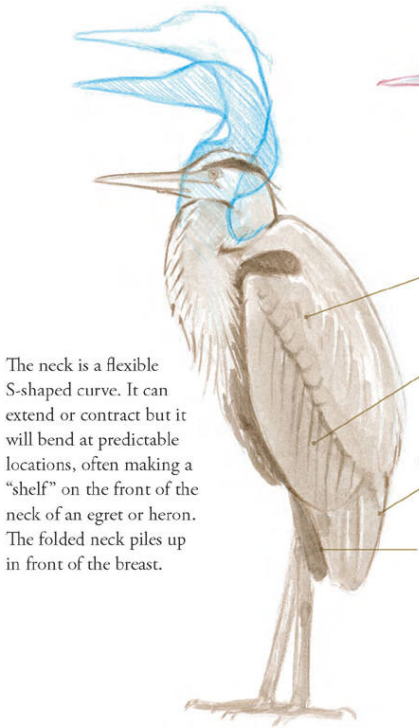
A bird resting on one leg will position that leg at an angle so that the foot res

Proportions are critical here. A subtle shift in head size will make a drawing
their bodies are the same size. Note the difference in the relative sizes of the

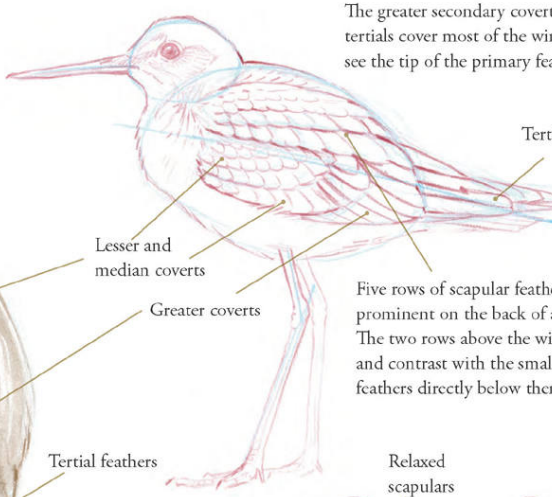
Look for the angle of the forehead. This will dramatically change the express

Carefully observe the proportion of the eye relative to the rest of the head. T

Leg length will also vary among species, as will the amount of the tibia expo



The neck is a flexible S-shaped curve. It can extend or contract but it will bend at predictable locations, often making a "shelf" on the front of the neck of an egret or heron. The folded neck piles up in front of the breast.



The greater secondary coverts tertials cover most of the wi see the tip of the primary fea

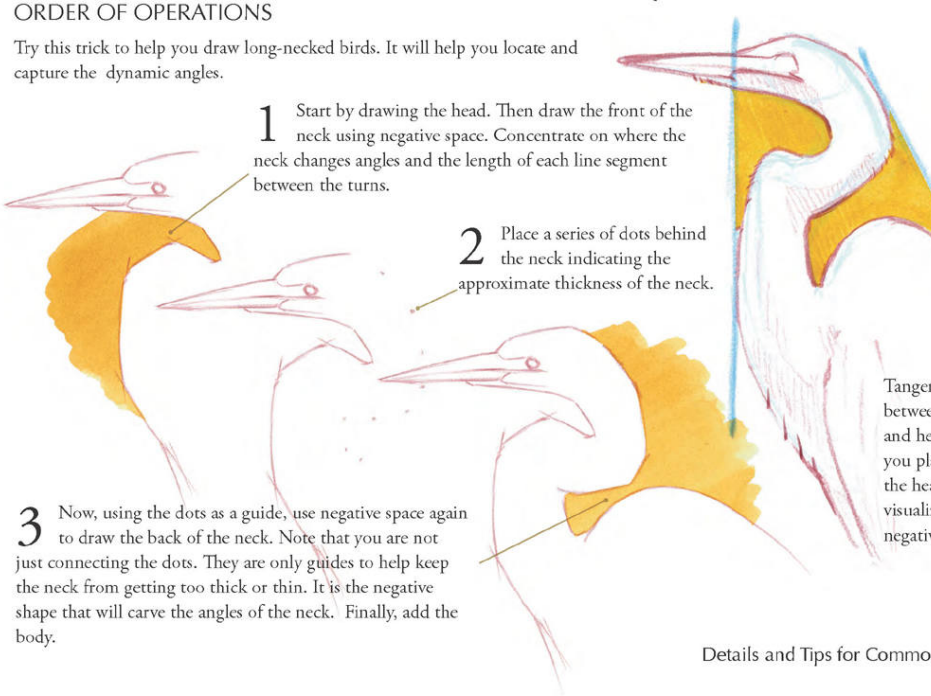
Tert

Five rows of scapular feath prominent on the back of The two rows above the wi and contrast with the smal feathers directly below the

The scapular feathers droop when the wing is relaxed, or they can form a sleek pad on top of the wing when the feathers are compressed.

ORDER OF OPERATIONS

Try this trick to help you draw long-necked birds. It will help you locate and capture the dynamic angles.



1 Start by drawing the head. Then draw the front of the neck using negative space. Concentrate on where the neck changes angles and the length of each line segment between the turns.

2 Place a series of dots behind the neck indicating the approximate thickness of the neck.

Tange betwee and he you pl the he visuali negati

3 Now, using the dots as a guide, use negative space again to draw the back of the neck. Note that you are not just connecting the dots. They are only guides to help keep the neck from getting too thick or thin. It is the negative shape that will carve the angles of the neck. Finally, add the body.

Tertials

Lesser and median coverts

Greater coverts

The greater secondary coverts and the tertials cover most of the wing. You ra

Five rows of scapular feathers are prominent on the back of a shorebird. The

The neck is a flexible

S-shaped curve. It can extend or contract but it will bend at predictable locat

Tertial feathers

Compressed scapulars

Primary feathers

The scapular feathers droop when the wing is relaxed, or they can form a sle

Relaxed scapulars

ORDER OF OPERATIONS

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Start by drawing the head. Then draw the front of the neck using negative sp

1

Place a series of dots behind the neck indicating the approximate thickness o

2

Tangent lines between body and head help you place the head and visualize

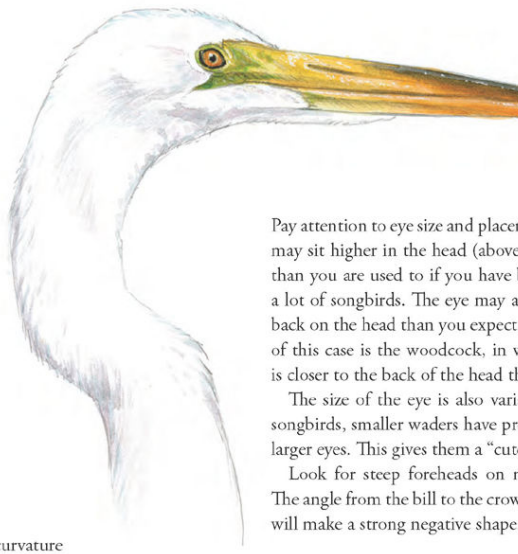
3

Now, using the dots as a guide, use negative space again to draw the back of
angles of the neck. Finally, add the body.

WADER HEADS

Pay attention to the proportions of bill lengths and the degree of curvature of the b
brain exaggerates any feature that draws your attention, so it is easy to make wa
too long and to exaggerate the curve of the bill.

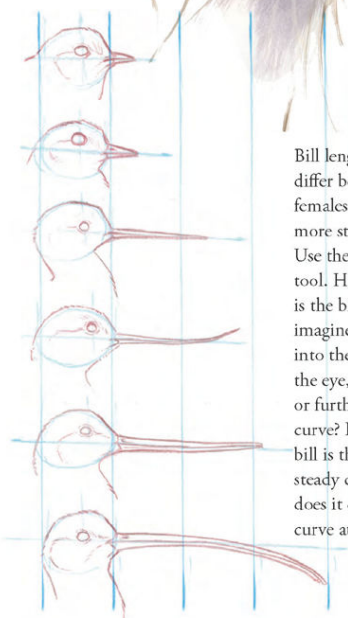
Heron and egret eyes are aligned with the upper bill. There are no feathers between the eye and the bill.



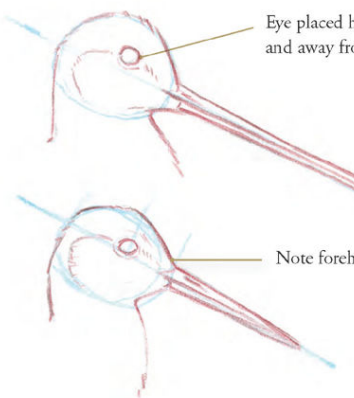
Pay attention to eye size and placer
may sit higher in the head (above
than you are used to if you have
a lot of songbirds. The eye may a
back on the head than you expect
of this case is the woodcock, in v
is closer to the back of the head th

The size of the eye is also vari
songbirds, smaller waders have pr
larger eyes. This gives them a "cut

Look for steep foreheads on r
The angle from the bill to the crow
will make a strong negative shape



Bill length and curvature differ between species, and females often have longer and more strongly curved bills. Use the head as a measuring tool. How many head lengths is the bill? For shorter bills, imagine flipping the bill back into the head. Would it reach the eye, the back of the head, or further? Does the bill curve? If so, how far down the bill is the flexion point? Is it a steady curve from the head, or does it come out straight and curve at the end?



Eye placed h
and away fr

Note foreh

WADER HEADS

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Heron and egret eyes are aligned with the upper bill. There are no feathers b

Pay attention to eye size and placement. The eye may sit higher in the head
the woodcock, in which the eye is closer to the back of the head than the fro

The size of the eye is also variable. As with songbirds, smaller waders have p

Look for steep foreheads on many waders. The angle from the bill to the crow

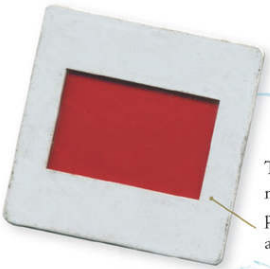
Eye placed high in head and away from bill

Note forehead angle

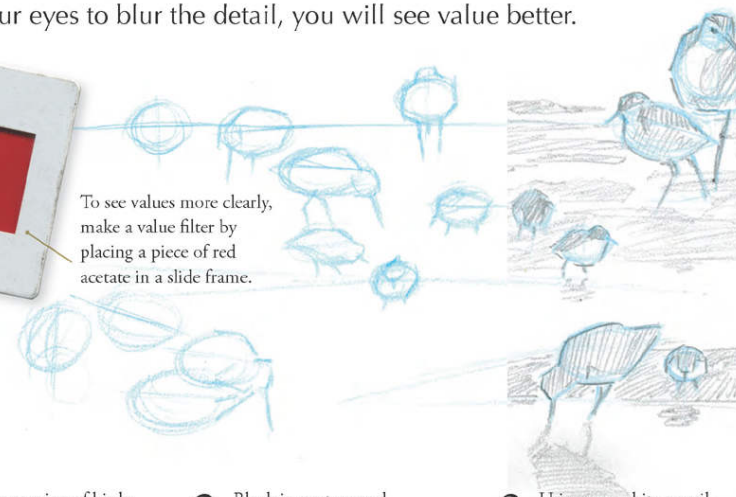
Bill length and curvature differ between species, and females often have long
reach the eye, the back of the head, or further? Does the bill curve? If so, ho

STEP BY STEP: SHOREBIRD VALUE STUDY

As with songbirds, start with posture, proportion, and angles. A useful next step in the values (areas of dark and light). Value is often overlooked as artists race to local colors or add detail, but value is a critical part of what we see. Look for it i If you squint your eyes to blur the detail, you will see value better.



To see values more clearly, make a value filter by placing a piece of red acetate in a slide frame.



1 Lightly indicate spacing of birds and exposed mudflats.

2 Block in posture and proportions of shorebirds and carve in the angles.

3 Using a graphite pencil, indicate the regions of dark and light.

4 Add a watercolor wash with the lightest color, the water. Note that water can be many colors, not just blue. Let it dry.

5 Cover the mud, birds, and reflections with a dark wash. When this is dry, paint the birds with a second wash.

6 Add detail sparingl a long way. The br the birds' backs are lost i

STEP BY STEP: SHOREBIRD VALUE STUDY

As with songbirds, start with posture, proportion, and angles. A useful next s
Look for it in nature. If you squint your eyes to blur the detail, you will see v

To see values more clearly, make a value filter by placing a piece of red acet

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4

5

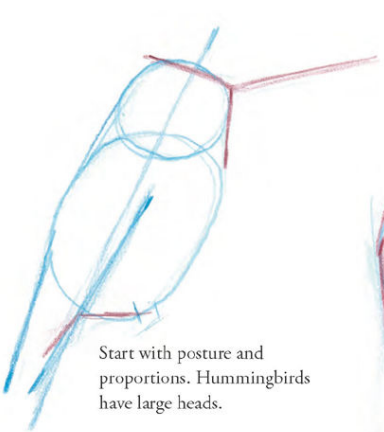
Cover the mud, birds, and reflections with a dark wash. When this is dry, pa

Add detail sparingly—a little goes a long way. The brown colors of the birds

6

HUMMINGBIRD HELPER

Hummingbirds can be very cooperative subjects to sketch. Prop your sketchboo
window near the feeder and they will come to you!

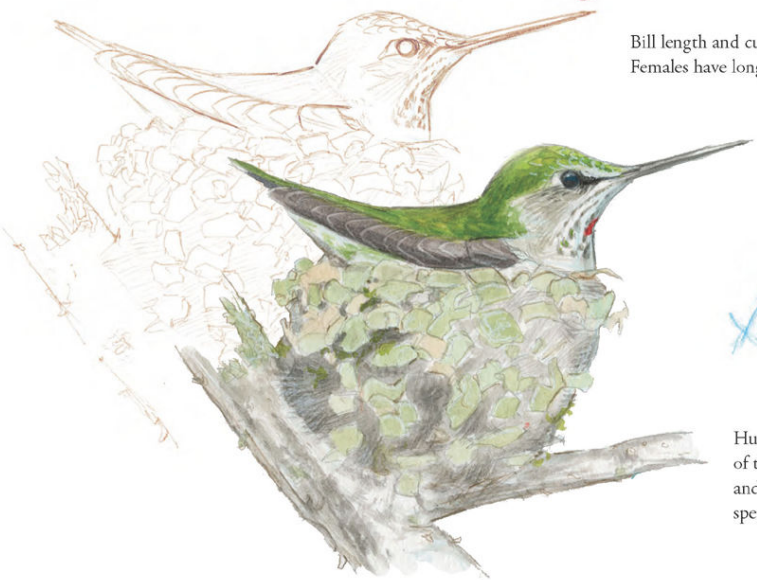


Start with posture and proportions. Hummingbirds have large heads.

Body feathers are proportionately large, making hummingbirds look rather scaly.

The feet and legs are very small. They are not scaly but covered with bare skin. Hummingbirds belong to the order Apodiformes, which means "without feet."

At rest, a h
often hold
below and
its tail.



Bill length and curvature vary among species. Females have longer bills than males.

Hummingbirds have 10 tail fea
of the usual 12 seen in most bi
and shape of the tail feathers va
species and also change as birds

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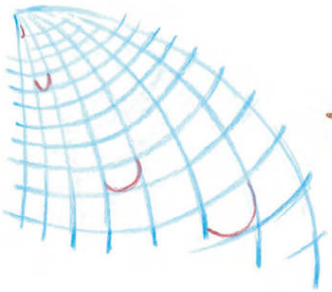
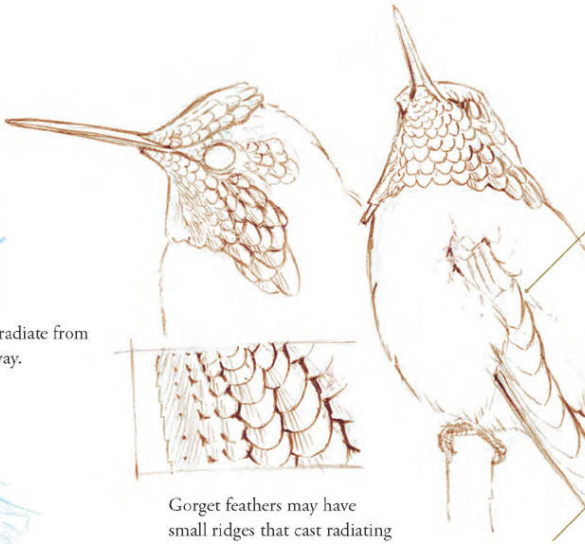
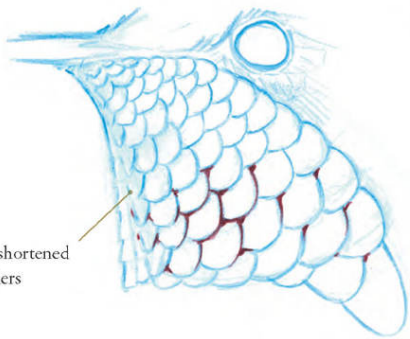


The iridescent feathers of the throat (gorget) radiate from the bill and grow larger as they get further away.



Gorget feathers may have small ridges that cast radiating shadows or reflect another color.

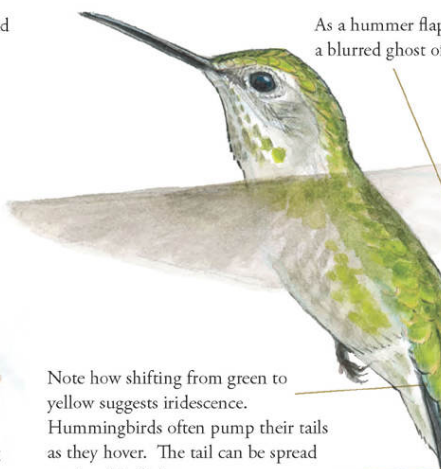
Long prim feathers



Foreshortened feathers

This diagram shows the edges of all the feathers in the gorget (blue). If you draw them all, your hummer will look scaly. Instead of drawing all of the feathers of the gorget, indicate a few at the edge of the shadow area and suggest intersections of other scales with dots (red).

High-speed photography gives us fascinating stop-m of hummingbirds in flight. But this is not what y field. Hummingbird wings flap much faster than th Consequently, you will see a gray blur around the bi hovers. When you sketch in the field, you only need you see. If you can't stop the wing in movement, draw



As a hummer flap a blurred ghost o

To suggest iridescence, vary the reflective color without blending (here from red to orange) and transition quickly to black shadow.

Note how shifting from green to yellow suggests iridescence. Hummingbirds often pump their tails as they hover. The tail can be spread or closed in flight.

Short secondary feathers

The iridescent feathers of the throat (gorget) radiate from the bill and grow l

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PRISMACOLOR
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Birds in Flight

Drawing birds in flight requires an understanding of anatomy and the basic forest principles that come into play as a bird moves through the air. As you draw, ima you can feel the air beneath the wings, suspending the bird in the air.

Birds in Flight

Drawing birds in flight requires an understanding of anatomy and the basic f

BUILD A FLIGHT FRAME

Simplify the shape of a flying bird with a frame to align the axis of the body and t
of the wings. Rotate and foreshorten the frame to draw a flying bird in different p
As before, capture the posture, proportions, and angles.

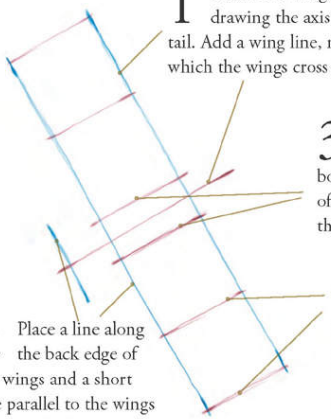
DRAW THE WING-BODY POSTURE

Start by drawing a bird stick figure to record the angles of the wings relative to the body.

BLOCK IN THE PROPORTIONS

Construct a flight frame over the posture. Watch the relative sizes of the wings and body as well as the proportions of the primaries to the secondary feathers. If the wings are held symmetrically, all points of the wing will stay parallel with the lines of the flight frame, including the wrists, the wing tips, the backs of the wings, and even the tail (unless it is being used to turn).

The proportions of wing and tail will change between species. Buteos have broad wings with prominent secondary feathers and short tails. Falcons have narrow wings with long primary feathers and long tails.



1 Create the wing-body posture by drawing the axis of the body, head to tail. Add a wing line, noting the angle at which the wings cross the body.

2 Place a line along the back edge of the wings and a short line parallel to the wings to show the length and width of the tail.

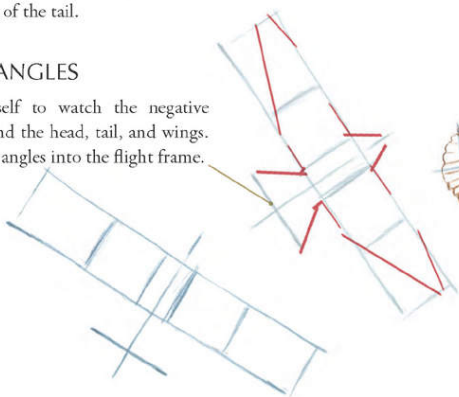
3 Place a set of lines above and below the body axis to show the width of the body at the plane of the wings.

4 Finally, add parallel lines across the wings to show the length of the secondaries and primaries. These proportions will change on different species.

You will not
extreme persp
distortion on
Avoid this co
"zoom" effect

CUT IN ANGLES

Train yourself to watch the negative spaces around the head, tail, and wings. Carve these angles into the flight frame.



Look past the bird to the negative space beyond it. See the angles that carve the shape of the head. Compare the angles of the shapes you see on either side of the tail.

The same flight frame and silhouette can be used to draw either the top or the underside of a bird in flight.

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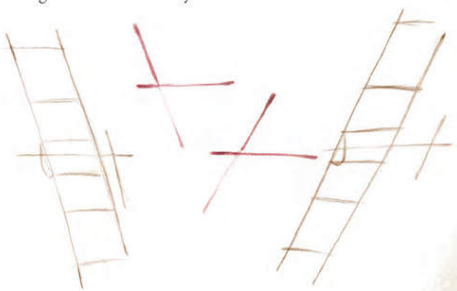
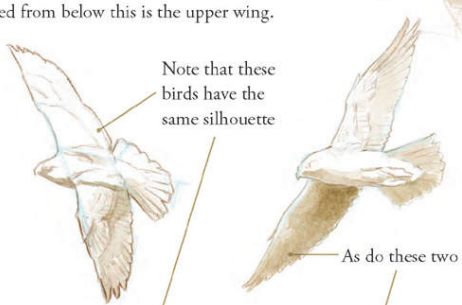
ANGLED FLIGHT FRAMES

If a bird is approaching or receding at an angle to the viewer, the wing-body po not be perpendicular. The wings will cross the body at an angle.

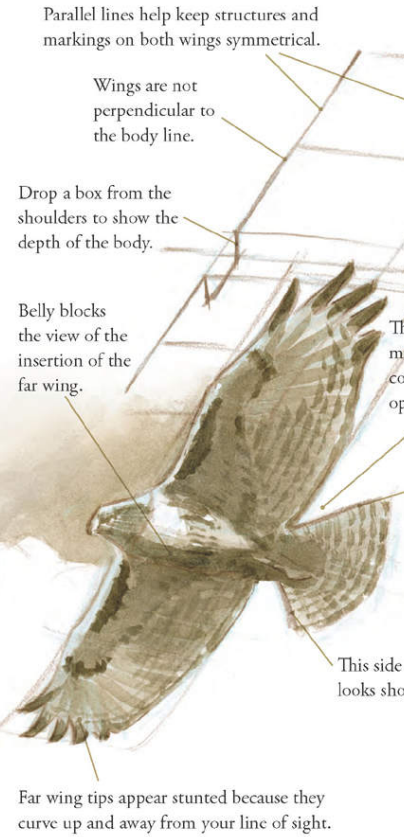
Angle the wings forward or backward relative to the body line to frame a bird that is approaching or departing from the viewer at an angle. The same flight frame and silhouette can be used in either case, but one bird will be observed from the top and the other from below. In birds observed from below, the body will block some of the wing that is farther away from the viewer.



Approaching As a soaring bird approaches you, the wing that is closest to you will be held at an angle, so that it appears behind the head. When viewed from the back, this is the lower wing. When viewed from below this is the upper wing.

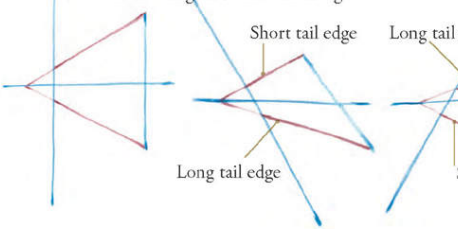


Departing As a soaring bird flies away from you, the wing that is closest to the viewer will be held at an angle so that it appears forward of the head. When seen from below, this is the upper wing. When seen from the back, this is the lower wing.


Parallel lines help keep structures and markings on both wings symmetrical.
Wings are not perpendicular to the body line.
Drop a box from the shoulders to show the depth of the body.
Belly blocks the view of the insertion of the far wing.
This side looks sho
Far wing tips appear stunted because they curve up and away from your line of sight.

FORESHORTENING TAILS

Simplify the tail to a triangle whose tip is inside the fr the wings. As the frame and the tail tilt, the sides of t become uneven. Note how the lengths of the sides an between the wing and tail both change.



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Belly blocks the view of the insertion of the far wing.

This angle is more acute compared to the opposite side.

Approaching As a soaring bird approaches you, the wing that is closest to yo

This side of the tail looks longer.

Note that these birds have the same silhouette

This side of the tail looks shorter.

As do these two

Far wing tips appear stunted because they curve up and away from your line

Departing As a soaring bird flies away from you, the wing that is closest to th

FORESHORTENING TAILS

Simplify the tail to a triangle whose tip is inside the frame of the wings. As th

Short tail edge

Long tail edge

Long tail edge

Short tail edge

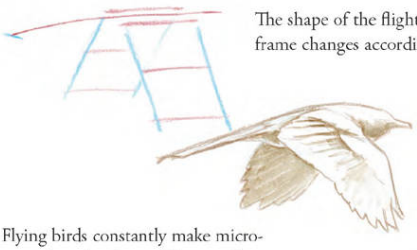
ANOTHER ANGLE ON WINGS

If a bird holds its wings up at an angle (dihedral) or down while flapping, each wing may be foreshortened to a different degree.

As birds flap their wings, the wing-body posture changes, creating a V that may be upside-down or asymmetrical.

As a bird rotates its body with wings held at either an up or down angle, differences in foreshortening become apparent. As you see more of the breast or the back, one wing may appear longer as well.

The shape of the flight frame changes accordingly.

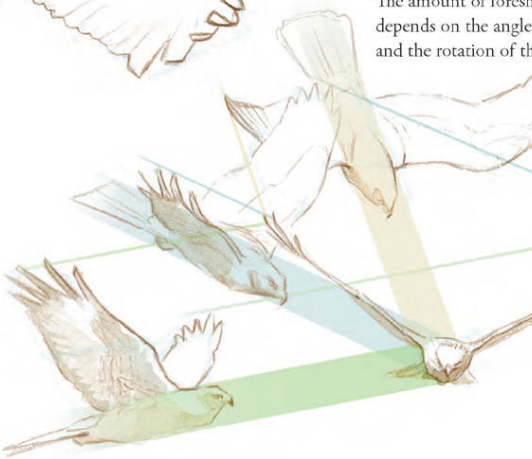


Flying birds constantly make micro-corrections in wing position to adjust for changes in updrafts and wind as they fly. This gives you leeway to slightly alter a bird's wing position and stay true to the physics of flight and the bird's flight profile. Observe soaring birds in the field. A bird surfing the updraft of wind at a cliff face is a perfect subject.

From above foreshorten wing, so it l However, th is strongly f because it p the viewer.

The amount of foresh depends on the angle and the rotation of th

When one wing is extremely foreshortened, the other may be seen at its full length.



The angle of the shoulders and wing base will be roughly parallel to the angle of the tail tip.

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As a bird rotates its body with wings held at either an up or down angle, diff

From above, we see less foreshortening on the far wing, so it looks longer. H

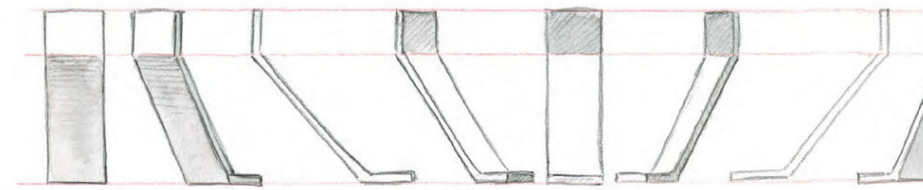
The amount of foreshortening depends on the angle of the wings and the rot

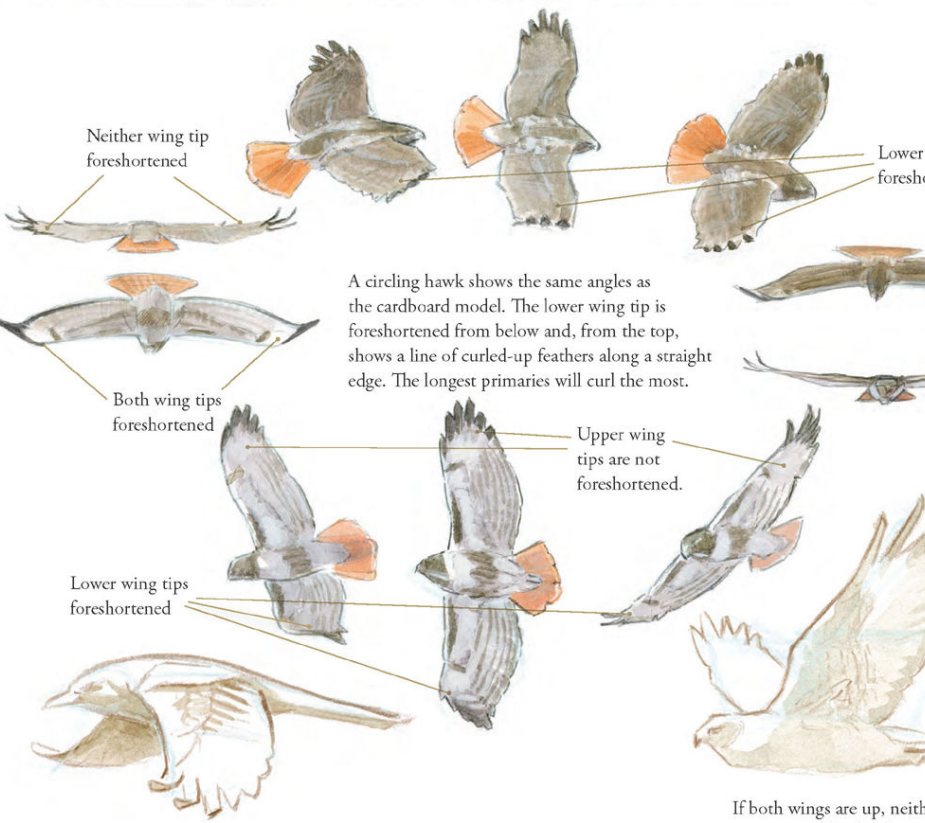
When one wing is extremely foreshortened, the other may be seen at its full

WING TIP TIPS

The tips of the wings of a large soaring bird, or those of a smaller bird in a downstroke, are pushed upwards by the air beneath them. When these curving point toward the viewer, they are foreshortened. The effect is that the longes feathers appear stunted.

Cut and fold a stiff piece of cardboard to make a wing platform with tips that curve upward. Spin the cardboard in your han how the lower wing tip becomes foreshortened, while the upper tip remains clearly in view.




Neither wing tip foreshortened
Lower
foresh
A circling hawk shows the same angles as the cardboard model. The lower wing tip is foreshortened from below and, from the top, shows a line of curled-up feathers along a straight edge. The longest primaries will curl the most.
Both wing tips foreshortened
Upper wing tips are not foreshortened.
Lower wing tips foreshortened

If both wings are down, the wing tips of both wings may curl up.

If both wings are up, neith wing tip will be foreshorte

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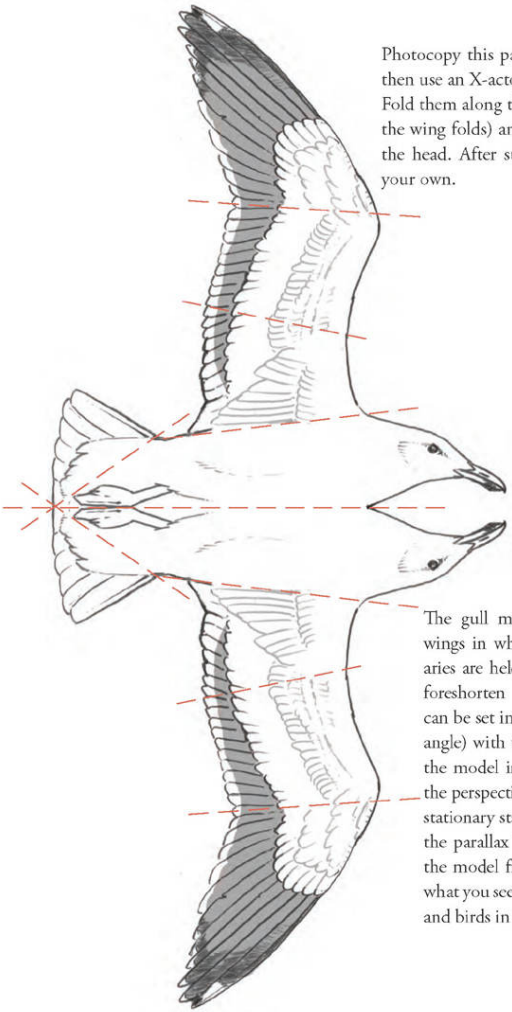
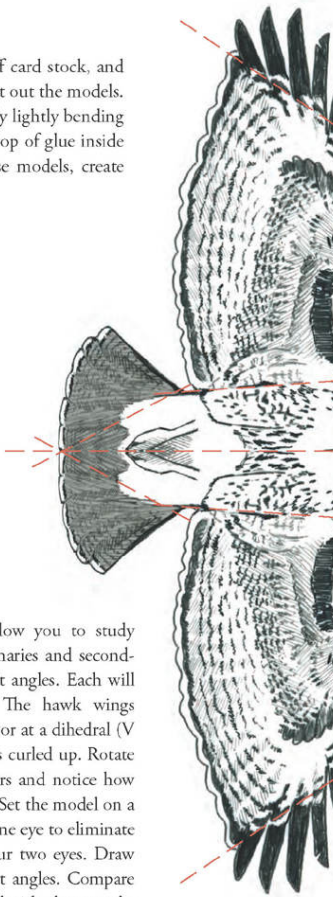
MAKE A FLIGHT MODEL

Use this page to create bird-in-flight models. By rotating the models in your ha
will develop an intuitive understanding of the perspective and angles of soaring b



Photocopy this page onto stiff card stock, and then use an X-acto knife to cut out the models. Fold them along the lines (only lightly bending the wing folds) and place a drop of glue inside the head. After studying these models, create your own.



The gull model will allow you to study wings in which the primaries and secondaries are held at different angles. Each will foreshorten differently. The hawk wings can be set in a flat plane or at a dihedral (V angle) with the wing tips curled up. Rotate the model in your fingers and notice how the perspective changes. Set the model on a stationary stand. Close one eye to eliminate the parallax between your two eyes. Draw the model from different angles. Compare what you see in the model with photographs and birds in the field.

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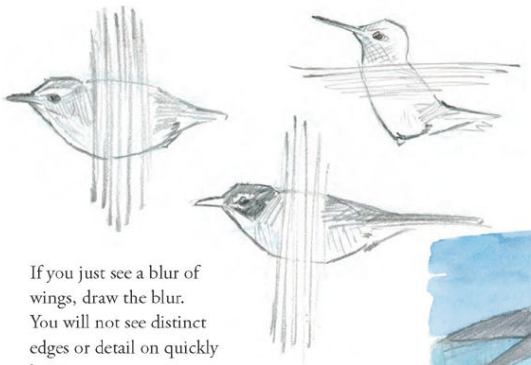
SKETCHING SMALL BIRDS IN FLIGHT

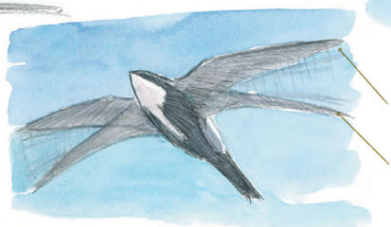
Large birds flap slowly and soar more frequently. The wings of small birds flap s
that they often blur. Even so, there are tricks that can help you draw fast-flappin
the field.

There is no way to freeze-frame a bird rushing past you without the use of high-speed film. In the studio, it is interesting to copy wings in action from high-speed photographs. In the field, draw what you see. A blur is a blur. Don't expect intricate detail in your field notes. You may be able to capture the shape of the bird body and perhaps the amplitude of the wing beats.

If a bird holds a brief glide, you may see the full spread of the wings. Distinguish the jagged fan of the outer primaries from the smooth body of the secondaries.



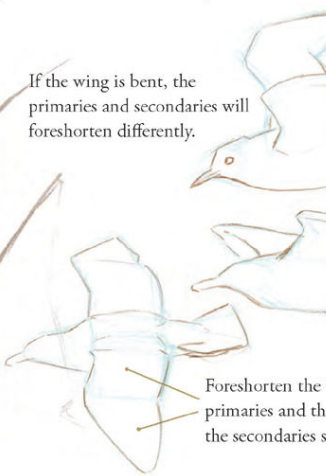
If you just see a blur of wings, draw the blur. You will not see distinct edges or detail on quickly beating wings.



Because the wing
and reverses at the
and bottom of the
you may see a gho
image of the wing
positions.

Watch gulls from the back of a boat and fill your sketchbook with impressions of what you see. The birds will be constantly
will return again and again to familiar angles. Try closing your eyes to clear your brain, then open them for a moment like t
camera, and then close your eyes once again. A moment in flight will be briefly etched into your vision. Make a fast sketch of
and then try it again. Quickly jot down the angle of the leading edge of the wing and the contour of the belly.

If the wing is bent, the primaries and secondaries will foreshorten differently.



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Because the wing slows and reverses at the top and bottom of the stroke, you

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moment like the shutter of a camera, and then close your eyes once again. A
and the contour of the belly.

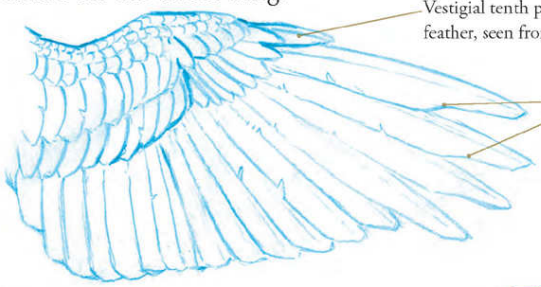
If the wing is bent, the primaries and secondaries will foreshorten differently

Foreshorten the triangle of the primaries and the rectangle of the secondarie

UNDERWING ANATOMY

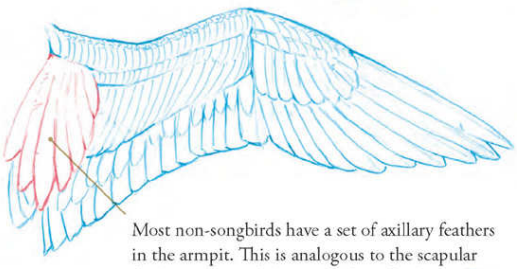
The feathers that cover the undersurface of the wing are similar to the upper songbirds. More primitive groups of birds, such as ducks, herons, or raptors, ha complex patterns of feathers on the underwing.

The underside of songbird wings is similar to the top. Covert feathers cover the leading edge of the wing. The primary and secondary feathers are reversed in their stacking order so that the primary feather is on top.

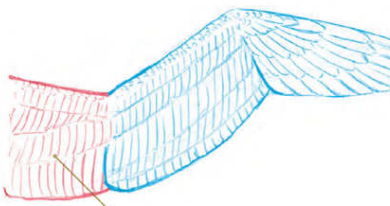


Vestigial tenth primary feather, seen from below

Outer prima have a **notch** narrower sec inner web of Similar to en the length ar the notch de move from t toward the s

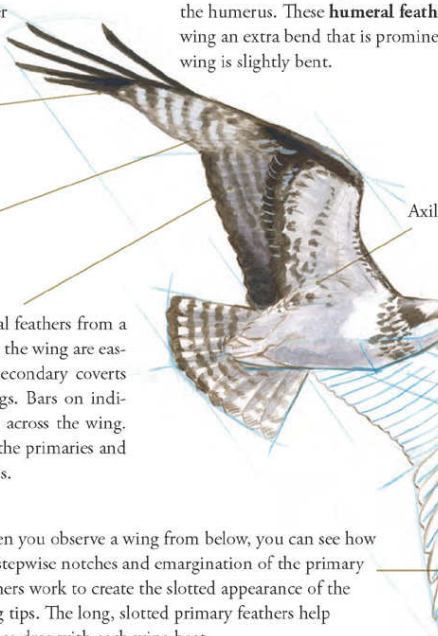


Most non-songbirds have a set of axillary feathers in the armpit. This is analogous to the scapular feathers on top of the wing. These feathers cover the area where the wing attaches to the body.



Long-winged seabirds, such as the a an additional set of flight feathers t the humerus. These **humeral feath** wing an extra bend that is promine wing is slightly bent.

Dark pigment in feathers gives them extra strength; because of this, the wing tips and feather edges are often heavily pigmented.



Look for a pale zone in the middle of the primary feathers.

Axil

It is difficult to see individual feathers from a distance, but the patterns on the wing are easily seen. The primary and secondary coverts often contrast with the wings. Bars on individual feathers create stripes across the wing. These stripes curve through the primaries and are straight in the secondaries.

A shadow can help depict the relationship between a bird and the ground.

When you observe a wing from below, you can see how the stepwise notches and emargination of the primary feathers work to create the slotted appearance of the wing tips. The long, slotted primary feathers help reduce drag with each wing beat.

UNDERWING ANATOMY

The feathers that cover the undersurface of the wing are similar to the upper

Vestigial tenth primary feather, seen from below

Outer primaries may have a notch, which is a narrower section on the inner

The underside of songbird wings is similar to the top. Covert feathers cover t

Most non-songbirds have a set of axillary feathers in the armpit. This is analo

Long-winged seabirds, such as the albatross, have an additional set of flight f

Axillary feathers

Dark pigment in feathers gives them extra strength; because of this, the wing

A shadow can help depict the relationship between a bird and the ground.

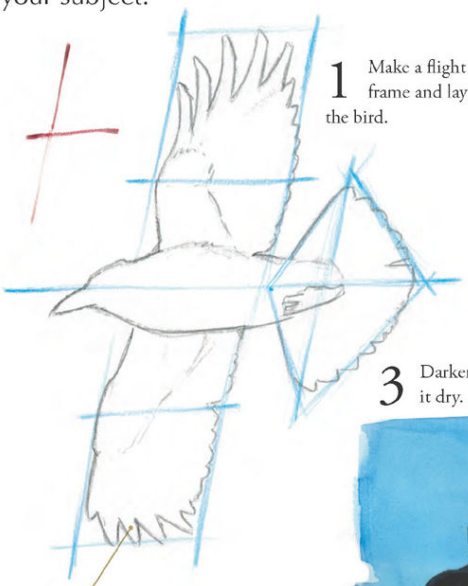
Look for a pale zone in the middle of the primary feathers.

It is difficult to see individual feathers from a distance, but the patterns on th
the primaries and are straight in the secondaries.

When you observe a wing from below, you can see how the stepwise notches

STEP BY STEP: RAVEN IN FLIGHT

Start with basic shape and proportion. Pay special attention to how foreshorteni
your subject.



1 Make a flight frame and lay in the bird.

The tip of the lower wing is foreshortened.

2 Paint a cyan wash o

3 Darken the bird's body and let it dry.

5 Play with the values, lift and adding it back in or dries. Try to suggest detail rat showing it explicitly. As a last the highlights with a white co

4 Lift out highlights with a damp brush.

STEP BY STEP: RAVEN IN FLIGHT

Start with basic shape and proportion. Pay special attention to how foreshort

2

Paint a cyan wash over the bird.

1 Make a flight frame and lay in the bird.

3

Darken the bird’s body and let it dry.

The tip of the lower wing is foreshortened.

Play with the values, lifting out paint and adding it back in once the paper d

5

4

Lift out highlights with a damp brush.

Doubble Crested
Cormorant
PRISMACOLOR
Cadet Blue

***

Field Sketching

Field sketching is the most important and perhaps the most enjoyable part of b
a good observer and a bird artist. Spending time with living birds in natural c
will help you develop an intuitive feeling for and kinship with the living anima
cannot get from photographs alone.

Field Sketching

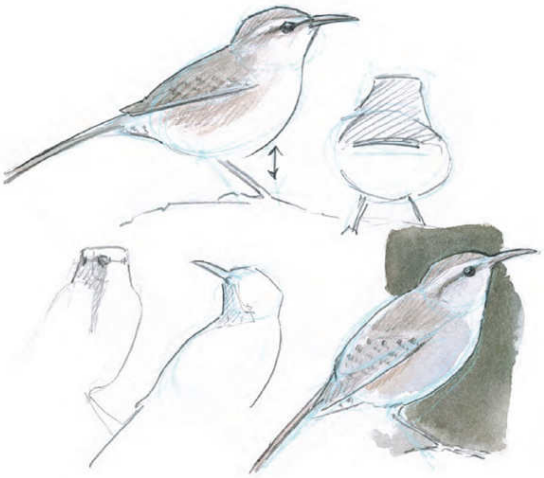
Field sketching is the most important and perhaps the most enjoyable part of
animal that you cannot get from photographs alone.

GO OUTSIDE AND DRAW

The purpose of field sketching is to learn from nature. Train yourself to look and lo until you see. Do not worry about making pretty pictures; instead, focus on docu what you learn during a direct encounter with nature.

Field sketching is the most important practice in understanding and being able to draw birds. Time spent outdoors watching real birds will help you understand the essence of birds. You will encounter their fierce, fragile wildness. There is a tremendous difference between the drawings of someone who has spent time in the field and the drawings of those who work from photographs alone.

Do not be afraid of blank paper. If you have trouble starting, write the date, location, and weather on the page right off the bat. This "opens the page" and makes it easier for other marks to follow. Keep lists and written notes adjacent to your sketches. This makes your journal feel less like a precious art project and more like a tool for recording what you see.



Draw what you see. If a bird is too far away for you to see details, just draw the shape. You do not have to make up where the eye, or any other parts you cannot see "should" be. If you draw only what you see, your field sketches will have a sense of what you are truly experiencing rather than a mix of reality and what you think should be there.

Try to avoid "correcting" your field sketches by copying over them with details from a field guide. What you record in your field notes has special value. These are your best field observations. Sure, there will be mistakes in them; you did not see exactly where that white stripe started or how far the brown extended on the back. Some of your drawings will have gaps and incomplete sections because you were not able to see those details. This is to be expected in field work.

Do your best to be true to nature, not true to some b you choose to draw portraits of birds based on your will have a rich primary source of what you really saw, hybrid of observation and copied details. You can use along with photographs, other drawings, or stuffed bi of information for other drawings.

When you first step into the field, many animals, your presence, will drop into the underbrush and hid surrounded by a sphere of silence and inactivity. The quietly, the more you will be accepted by the animals Your sphere of disturbance will shrink as birds begin of hiding and go about their business, accepting you environment. Sitting still takes patience, and drawing to occupy yourself while you wait. Try starting by dra growing next to you or a thumbnail landscape while birds expose themselves near you, begin drawing then move off you can return to the other sketch.

By spending time with animals in their natural habi to understand them deeply and sympathetically. We fe the morning or the hour of the day. This sense of time be suggested in simple sketches.

Sketching also improves your memory. When you dr of your perception are wide open. The sketching pr memories in your mind. You will find that you not o what you were drawing but also details of the day tha even record.

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Sketching also improves your memory. When you draw, the doors of your pe
that you did not even record.

FIELD SKETCHING IS NOT FIELD GUIDE ART

Field guide illustrators often paint birds in a soft neutral light to emphasize the lo
of the feathers without the distraction of strong shadows and highlights. This is go
are painting for field guides, but when sketching birds from life, draw what you

You have seen thousands of bird illustrations in field guides. As a result, you may try to make your field sketches look like the bird in the guidebook. But what you see in books is different from the actual bird that you encounter outside. Field guide art is intended to facilitate bird identification. This goal is vastly different from learning while sketching in the field.

In field sketches, body position is whatever you find, not just a profile. The bird may fluff or compress its feathers in response to temperature.

Body may
reflected
the enviro

Shadows and highlights may make stronger patterns than local color.

WAXWING AS SEEN IN THE FIELD

Key field marks may be obscured by foliage or body position.

In a field guide, lighting is usually from the upper left with the subject facing into the light (turned left).

Distinguishing characteristics are emphasized.

WAXWING AS SEEN IN A FIELD GUIDE

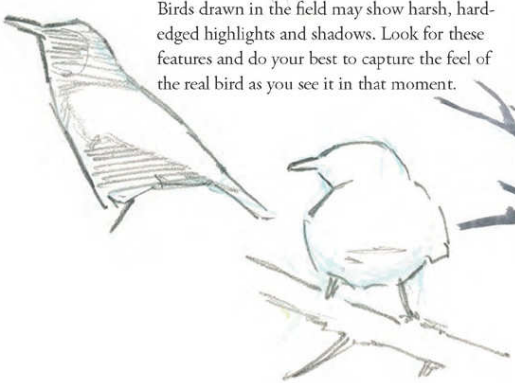
Local color of feathers is prominent.

Subtle shadows and highlights give form and dimension.

Body in typical posture but still showing plumage details. Here the wing position allows you to see both the uppertail and undertail coverts.

You do not need better binoculars or a different vie
Work with what you see. Try to record your expe
ephemeral encounter with the animal. How does thi
this evening, in this place? There is no generic waxwin
ideal shown in the field guide does not exist.

Birds drawn in the field may show harsh, hard-edged highlights and shadows. Look for these features and do your best to capture the feel of the real bird as you see it in that moment.



Think of both sh
highlights as sha
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Even a simple th
scale (highlight,
shadow) will wo

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The platonic ideal shown in the field guide does not exist.

Birds drawn in the field may show harsh, hard-edged highlights and shadows

Think of both shadows and highlights as shapes. Block in these shapes and a

Can’t see the feet or the eye? Then don’t draw them. Go with what you actua

WORKING IN THE FIELD

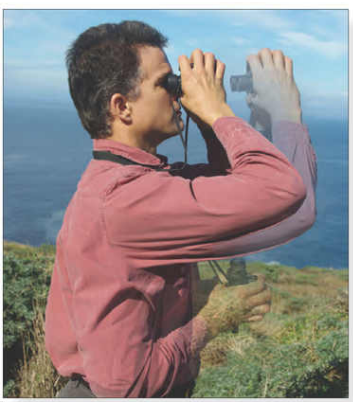
Drawing live birds in their natural habitat is the best way to get to know ther are some challenges in doing this but if you anticipate them and are prepared, minimize the difficulties and maximize the advantages.

WILL IT STAY OR WILL IT GO?

If you suspect the bird will fly away quickly, don't fumble with your gear, but look intensely at the bird while it is in front of you. Start with posture, proportions, and angles, and then focus on how the bird looks in this particular light. Where is the shadow? Does it have a sharp edge? Can you see a highlight or rim light? Also, note plumage patterns and interesting negative shapes created by the feathers from the angle at which you are viewing it. If the bird flies away, quickly jot down what you saw in simple sketches. If the bird is cooperative enough to stay in one place, start a series of drawings noting different postures. When you look up at a bird, you will be able to hold a small piece of information in your mind for a few seconds. Sketch this down and then look again. If you spend most of your time looking at your paper, you may not be taking full advantage of opportunities to watch the bird itself.

TALKING TO YOURSELF

As I watch the bird, I softly (but out loud) mumble discreet observations to myself: "dark bill tip, sharp angle between nape and crown, thin lateral throat stripe…" I know, it sounds crazy. You will feel self-conscious at first, but you will quickly discover that by verbalizing your observations, you will be able to hold them in your memory longer, making it easier to get them down on paper.



Find that bird! Don't bring your binoculars up to your eyes and then hunt for the bird. Instead, lock your head and eyes on the bird, bring your binoculars up in line with the bird to cover it from your view, and then bring your binoculars straight back to your eyes.

USE BOTH WRITING AND DRAWING

Some observations are easier to write than to draw. writing and drawing in your field notes. This has the add of making your sketchbook feel less like an art project t record your notes and observations. In field notes, just being fussy trying to make pretty drawings, do not using perfect grammar and spelling. Simply get the no Make sure to include date, time, location, and weathe part of your field notes.

FIELD EQUIPMENT

There are three guidelines to keep in mind when s equipment: simple, light, and portable. Hold all of you these standards. Keep your field sketching kit stocked go. Everything should fit in a portable bag that you ca your shoulder so you are ready to hit the trail. A shoulde than burying your drawing materials in your backpack. takes to get out your sketchbook and put it away, the l will be to use it. Keep your sketching kit accessible. Stor binoculars and you will be much more likely to take it w you step outside. Include a plastic bag in your kit to use wet day or for collecting trash.

Good optics will bring a bird into your lap. Lightweig can be held in one hand as you sketch. If your binocular stabilize it by pressing your forefinger against your b binoculars are too heavy, you will need both hands to sup you are right-handed, train yourself to hold the binocula hand so that you can work your pencil with your right ha sitting still, you can watch it for long periods through a sp This is ideal for shorebirds, waterfowl, or perched hawks. has a zoom eyepiece, start with the lowest magnification of view) and then zoom in once you find the bird. You c the size and viewing area to create different compositio see in two dimensions when you look through the single telescope. It is easier to translate this view to the paper s also is two-dimensional).

To avoid ac stabbing yo the eye, ne your pencil binoculars

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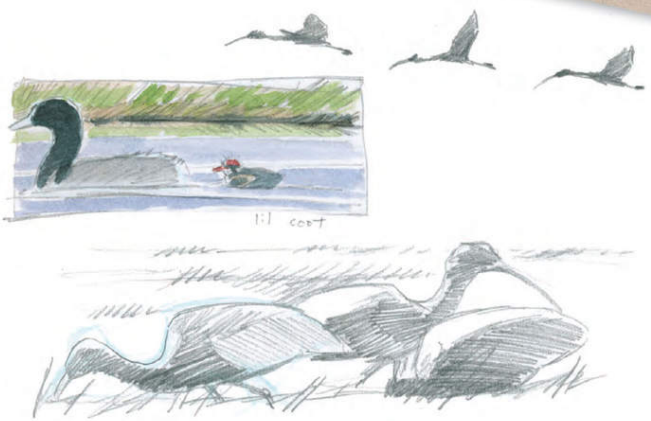
Good optics will bring a bird into your lap. Lightweight binoculars can be he hands to support them. If you are right-handed, train yourself to hold the bin for shorebirds, waterfowl, or perched hawks. If your scope has a zoom eyepi compositions. You only see in two dimensions when you look through the sc

To avoid accidentally stabbing yourself in the eye, never hold your pencil in

How you hold your gear difference. To make a sta platform, tuck your arm journal with your fingers the top and firmly press your body.

If you are sketching th lightweight binoculars, h your non-dominant hand your arm on your knee. through a spotting scope it frees up both hands to sketchbook and brush.



ZOOM IN AND OUT

It is easy to get stuck in a rut of drawing birds at the same size Experiment with zooming in to at detail. Then zoom out to obs the bird in its habitat. You will and learn different things at eac What do you notice with your eye, your binoculars, a spotting

How you hold your gear makes a difference. To make a stable drawing platfo

If you are sketching through lightweight binoculars, hold them in your non-d

ZOOM IN AND OUT

It is easy to get stuck in a rut of always drawing birds at the same size or sca
with your naked eye, your binoculars, a spotting scope?

FIELD SKETCHING ZEN

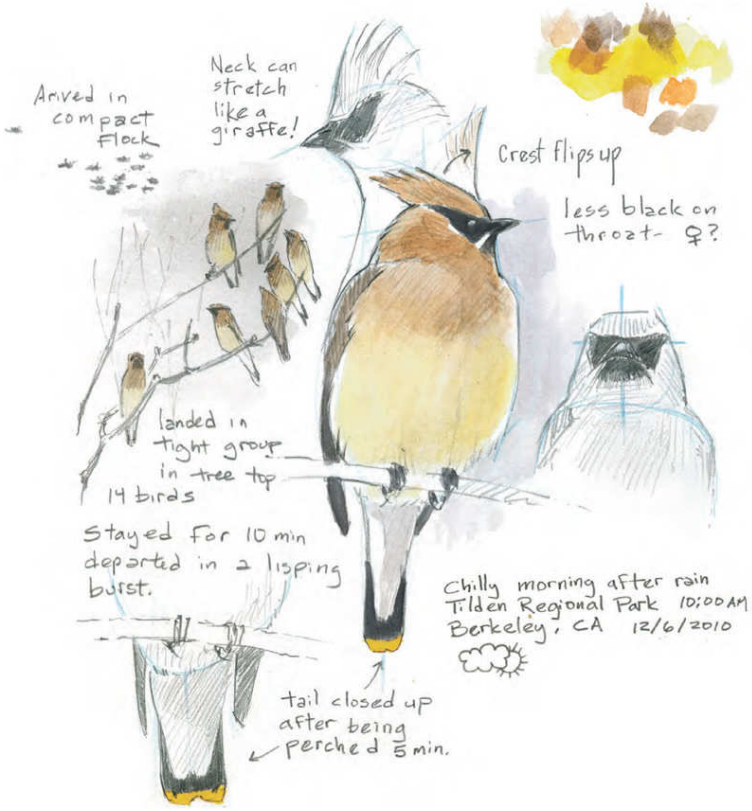
The most important part of field sketching is not the drawing itself, but the focu brings to your observations and the strengthened memories that emerge from what you see.

When you discover a bird in the field, start by carefully observing it. It may fly away, so take advantage of the chance to observe. What is its posture? What are its proportions of head to body? Look for the angles. Note the bill length, the tail length, and the primary projection. Mumble your observations softly. If you say what you see, it will stick in your brain a little longer. Then grab your sketchbook (which you keep in that accessible shoulder bag) and get to work.

Draw without fear. If you are afraid of making a mistake, you will prevent yourself from getting anything down on paper. Just do your best with what you see. Of course there will be mistakes. You can correct these errors in a second sketch or simply by adding written notes alongside your drawing. Use writing and sketching together to document as much information as you can in the easiest way possible. Some things are easier to write, others are e Remember that these are field notes, not art projects.

Look for postures, variations in plumage, angles, or of the bird that are not depicted in the field guide. You to draw a generic bird, but the individual in front of yo have to complete any of the drawings. You can also co pieces of what you see rather than drawing several com you notice an interesting angle of the head, simply dra If you notice that the legs take a striking stance, sketch you notice that part of the head pattern takes a surpri a certain angle, make a quick sketch of what you see. pieces can come together later in a more comprehensiv

If you feel overwhelmed by a complex subject, m easier by focusing on a s the larger subject. You c understanding how the bi the head, or make thumb of postures showing the va positions. Ignore the patt draw how shadows and h cast on the bird. Or you the proportions and silhou sketch does not need to be portrait.


Arrived in compact flock
Neck can stretch like a giraffe!
Crest flips up
less black on throat- ♀?
landed in tight group in tree top 14 birds
Stayed for 10 min departed in a lipping burst.
Chilly morning after rain Tilden Regional Park 10:00 AM Berkeley, CA 12/6/2010
tail closed up after being perched 5 min.

You will meet birders a who will look at your sket perverse glee in finding s correct. They may say so "No, no, no, the median c be tan…" These people mis field sketch is not about ma illustration; instead it is a to you to look more closely. J say thank you—you just m

Most of all, enjoy you Drawing birds is a great ex quiet time in nature. At t day, your field notes tell what you observed.

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If you feel overwhelmed by a complex subject, make your job easier by focus
positions. Ignore the pattern and just draw how shadows and highlights are

You will meet birders along the way who will look at your sketches and take
about making a perfect illustration; instead it is a tool that allows you to loo

Most of all, enjoy your field work.

Drawing birds is a great excuse to spend quiet time in nature. At the end of t

DRAWING MOVING BIRDS

Birds do not hold still and pose for your drawings. There are ways to take advantage glimpses of moving birds and make the most out of encounters with cooperative c

Birds will change position. Count on it. Anticipate and welcome the new head position, body angle, wing droop, or fluffing feathers. These are opportunities to learn something new. Even a bird that is sitting still will rotate its head. Start drawing the first position that the bird takes. If it moves, start a second drawing on the same page, next to the first drawing. If the bird moves another time, begin a third drawing. It is easier to draw both a right-side and left-side view than it is to flip the bird over in your mind. Light will also fall differently on the right side and the left. When you wait for the bird to come back to a pose that you started in your first sketch, somehow the bird can tell, and it will never come back to that posture. The solution is to keep drawing. If the bird comes back to a pose you have already begun, jump back to that drawing and continue. The most developed drawing will be the most characteristic posture of the bird! You can also give one bird multiple heads, tails, or wings, showing its movement in one sketch. Do not worry about finishing any of the drawings that you start. This is not bird portraiture—it is field sketching. You are learning from nature.

Test colors before applying them to the bird.

If you are sketching birds in a flock, you can jump fro bird to assemble one drawing depicting one pose. If y flock showing multiple poses, you can switch betwee as your subjects move. As you draw, observe and repr spacing between the individual birds and the commo

Each time the bird moves, start a new drawing. How do the posture and angles change with each pose?

As you sketch, look for field marks or postures that are not in your bird book.

How does light fall on the bird?

The drawing on which you get the farthest will be the most common posture of the bird.

What shapes do the highlights make?

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represent the spacing between the individual birds and the common light sou

How does light fall on the bird?

What shapes do the highlights make?

BIRDS IN HABITAT

A bird on its own is lost on a sea of white paper. A flock of birds begins to show behavior relationships between birds. Observing and drawing birds in their own h as part of a scene will allow you to tell an even richer story.

A sketch of a single bird floating on white paper gives some information: pattern, shape, or posture

Showing a group of birds also communicates relationships between them, how close they cluster together or what species associate with each other.

Just adding a hint of habitat mini-landscape behind the bi puts them in a deeper contex background does not need to detailed or extensive to tell a

Do not think of it as adding "background," which can feel like an afterthought. A little bit of habitat gives meaningful context to the birds. One way of doing this is to place a box or a circle behind the birds. Draw your habitat within this frame. Habitat images do not need to be elaborate nor take a lot of time to create. The bodies of the birds may even block most of the scene.

Your birds may feel claustrophobic if they are completely encased in the habitat box, so play with "breaking the box." Place the habitat sketch so that it does not completely enclose the birds.

Make sure that the bird and the habitat scene are lit from the same light source. Consider incorporating some of the background color into the bird and vice versa to achieve color harmony. Highlights and shadows may show some of the same warm or cool colors.

Even a little color and value behind a bird sketch can help evoke the location and habitat of the subject. A dark background can also help accent the sunlit edge of a bird.

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TRAVEL SKETCHING

Sketching unfamiliar birds is a powerful exercise to train yourself to draw wha
instead of what you think "should" be there.

If you focus on generating the
possible, you will turn away f
moment you have identified
has identified it for you. Wha
opportunity to observe! Take y
deeply, and draw. You will re
you see and make countless
coveries. You may find this mo
than a big list.

When you are drawing a bird that is unfamiliar to you, there is a strong temptation to check the field guide to "get it right." You may spend more time looking at the field guide than the bird itself. Don't worry about making a mistake, and give yourself permission to err. Focus on discovery and try to see and capture as much as you can. A new bird is an opportunity to see with a fresh "beginner's mind," uncluttered by what you already know.

Sketching unfamiliar birds is a powerful exercise to train yourself to draw wl

If you focus on generating the largest life list possible, you will turn away fr
remember what you see and make countless behavioral discoveries. You may

When you are drawing a bird that is unfamiliar to you, there is a strong temp
permission to err. Focus on discovery and try to see and capture as much as y

Birding as you travel helps you notice aspects of a new landscape that you might otherwise miss. The birds you encounter ha and with the conditions of this foreign place. How are they similar to or different from birds that you are used to seeing? Wh bird songs fill the air? Be wary of birding to the exclusion of taking in the rest of the landscape.

Birding as you travel helps you notice aspects of a new landscape that you m
seeing? Why? What new bird songs fill the air? Be wary of birding to the exc

DOCUMENTING RARE SPECIES

Field notes are very useful for recording observations of rare species or birds outside their usual range. Take rigorous and specific notes to document a rare sp

MAKING A FIELD DESCRIPTION

Field notes and sketches made while actually observing the bird and before referencing field guides are your most critical primary source. When you find a bird that you think may be a rarity, make annotated sketches from multiple views documenting what you see. It is easy to miss parts of a bird, and for these notes you must be thorough, not just noting key field marks. Work systematically and describe the head, back, wings, rump, and tail. Then flip over to the front and describe it from chin to the undertail coverts. Finally, describe the soft parts, eyes, bill, and legs. Make size comparisons with other birds nearby. Note feather wear. If the bird makes any sounds, describe them as best you can. (Sometimes birds will make distinctive sounds just as they fly away.) How many birds were seen? Were they keeping to themselves or were they associating with other species in a mixed flock? Describe any behavior that you see, and make gesture sketches of these postures. If it is possible, call in other birders to observe the bird and take photographs to supplement your sketches.

If the bird leaves before you have completed your notes, write down how much time you were able to actually observe the bird. Then write down everything in your short-term memory in a different section of your notes, still without referencing a field guide. To keep memory sketches separate from those drawn from life, write "life" next to the life sketches and "memory" next to the sketches done after the bird flew away.

Once you have recorded everything you remember, or finished your notes while the bird is still in view, open your field guide and compare it with your observations. Be careful, because the book may suggest details that you did not actually see. Do not modify any of the original drawings based on what you see in the guide. It is common for a bird in the field to look substantially different than the illustration in a field guide. Trust what you observed. If the bird is still visible, look for characteristics depicted in the book that you did not initially observe. Then make new sketches that include these details as you notice them on the actual bird. If you make any new drawings, label them "life and reference" or "memory and reference." This practice maintains the integrity of the primary source of your field notes.

REPORTING RARE BIRDS

Different states and provinces have slightly differen reporting rare birds to a regional rare birds records com online to obtain the reporting forms for your area. A the reviewing committee will request this basic inform

Date and time: Include both the time that you sa the duration of the observation.

Location: Go from general (state, county) to spec drawn map if necessary. Note the environmental cond habitat, weather, temperature, and light levels.

Observers and equipment: Names and experi observers present. Include the distance from bird used. Also describe what resources (field guides, etc identify the bird.

Description of the bird: This is where your fie come into use. Document everything you saw and of sketches, original field notes, and photographs. Ex would eliminate similar species from your identific discrepancies in the observations of different observer

Practice making careful documentations on comm species. This will help you observe those species m carefully and will train you to look at the same lev when observing rare or out-of-range species. Your do not have to be pretty, but your observations mu clear, and specific.

DOCUMENTING RARE SPECIES

Field notes are very useful for recording observations of rare species or birds

REPORTING RARE BIRDS

Different states and provinces have slightly different processes for reporting r
information:

Date and time: Include both the time that you saw the bird and the duration

Location: Go from general (state, county) to specific. Include a drawn map if

Observers and equipment: Names and experience level of observers present.

Description of the bird: This is where your field notes really come into use. D
Discuss discrepancies in the observations of different observers.

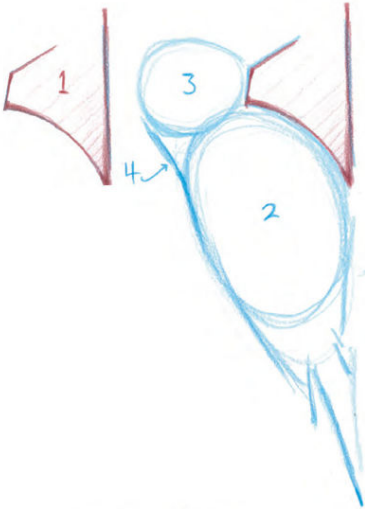
Practice making careful documentations on common bird species. This will h
pretty, but your observations must be rich, clear, and specific.

MAKING A FIELD DESCRIPTION

Field notes and sketches made while actually observing the bird and before r
what you see. It is easy to miss parts of a bird, and for these notes you must
undertail coverts. Finally, describe the soft parts, eyes, bill, and legs. Make si
they fly away.) How many birds were seen? Were they keeping to themselve
birders to observe the bird and take photographs to supplement your sketche

If the bird leaves before you have completed your notes, write down how mu
guide. To keep memory sketches separate from those drawn from life, write

Once you have recorded everything you remember, or finished your notes wi
modify any of the original drawings based on what you see in the guide. It is
depicted in the book that you did not initially observe. Then make new sketc
maintains the integrity of the primary source of your field notes.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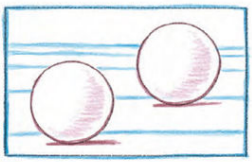

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Materials and Techniques

KEYS TO BETTER DRAWING

Here are some concepts that you can apply across your drawings. Experiment w and adapt them to your own drawing style.

SHAPE BEFORE DETAIL

First things first. Don't get bogged down in detail at the start of a drawing. Focus on capturing the basic shape: posture, proportions, and angles. Use negative shapes to check your form before starting to add details. Once you add detail, it becomes difficult to see errors in your original shape, because you can be distracted by the details and you will not want to change proportions on any part of the drawing that you have "finished."

MAKE DECISIONS WITH ANGLES

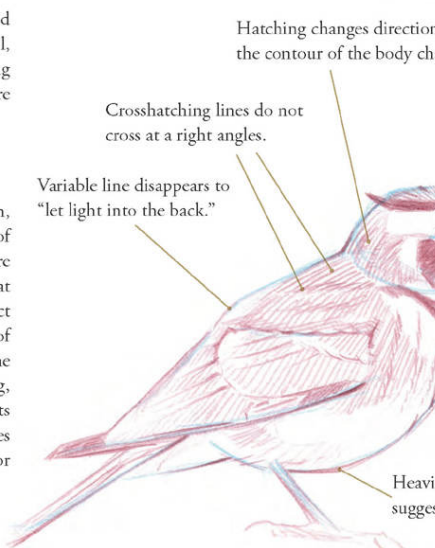
Use circles and ovals to approximate the basic shapes. A is a great way to start, these shapes lead to a tendency t the drawing. There are subtle contour shifts along the objects in nature. Look for these angles and carve th drawing. Each angle marks a decision: this contour degree at this point. Carve in the angles and watch come to life.

USE A VARIABLE LINE

Your pencil is a very flexible tool. It can create thin or thick lines and dark or light lines. If you vary the pressure and angle of the pencil, you will achieve a variable stroke. This is more visually interesting than a line produced by one level of pressure throughout the entire drawing.

SHOW PLANES WITH PENCIL STROKES

If your pencil shading lines show through in your final illustration, you can use them to describe the form of the object. Let the angle of your pencil strokes change to follow the contour of the body. If there is a sharp change in angle, your pencil lines can change direction at the edge of the planes. Pencil strokes can wrap around a curved object like contour lines on a topo map, they can flow down the planes of the subject like water, or they can indicate the direction that the feathers lie on the body. You can darken areas by cross-hatching, adding additional sets of lines at acute angles to the first. Make sets of cross-hatched lines at an angle close to the first set (making spaces that look like small diamonds). Avoid cross-hatching at 90° angles or the pattern will make a mechanical checkerboard.



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carve them into your drawing. Each angle marks a decision: this contour ben

Hatching changes direction as the contour of the body changes.

Crosshatching lines do not cross at a right angles.

Variable line disappears to "let light into the back."

Heavier line suggests shadow.

Avoid the "snowman" shape by cutting in angles

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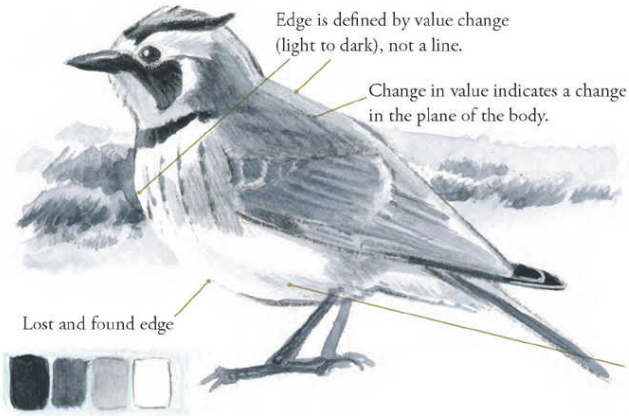

Edge is defined by value change (light to dark), not a line.
Change in value indicates a change in the plane of the body.
Lost and found edge
Shadow area does not reach edge
body because of reflected light.

PLAY WITH THE EDG

You do not need to encase y in a solid line. Create "los edges, leaving gaps in the suggesting sunlight dancing Not all edges need to be def Value shifts, either dark again against dark, can also indica an object. Use a contrasting create an edge with a change

SIMPLIFY YOUR VALUES

Instead of a continuous range, the drawing above uses only four discrete values. A simplified system like this is easier for the artist to visualize while drawing. It also will help you to consider the boundaries of each value area as an artistic decision, in contrast to the default view of shading that gradually fades into white. A drawing can have a simplified value range and simultaneously can use the full range of values.

CONSIDER THE FULL VALUE RANGE

Using the full range of dark-to-light values can introduce depth and interest into a drawing or painting. Look for ways to increase contrast in your drawings while staying true to the subject. Highlights are only bright in comparison to the dark values in your picture. Can you push your darks darker or crisp up the highlights? After carefully painting a bird, I often discover that the whole picture is too pale because I have not incorporated the full range of value that is in front of me.

To help you learn to focus on value, try monochromatic painting, using only one color (like a black-and-white photograph). You can also see value by looking at your subject through a red acetate filter as a means of seeing a monochromatic world. Without a filter, you can see value contrast by squinting at your subject, which will blur details and emphasize value changes.

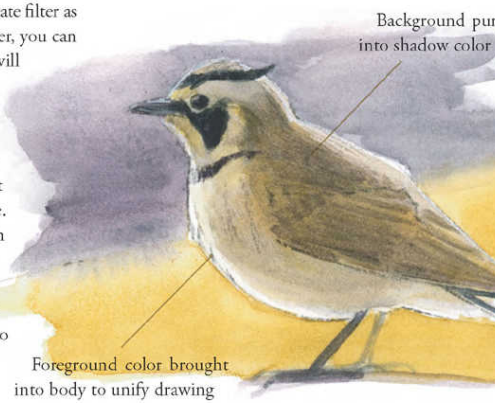
If your paintings are too pale, put in your darkest values early (even though this goes against the traditional watercolor wisdom of working from light to dark). This will force you to adjust the painting to match the darks. At the other end of the spectrum, leave your white areas white. If you are using watercolor, leave those areas that you wish to be bright white untouched. You cannot achieve a white brighter than white paper. A successful painting can also have a limited value range, but be intentional about the decision to limit the values. Remember that colors also have values. Yellows tend to be light values, blues dark.

TRY A LIMITED COLOR PALETTE

A painting that uses too many colors may look like a col instead of a unified piece. A more limited palette brin sense that the painting is illuminated from a single lig painting with a small set of adjacent colors on the co perhaps use a touch of a color from the opposite sid wheel as an accent.

COLOR TEMPERATURE OVER LOCAL C

Beginning artists often focus on painting the overall (this tree is green, this fire engine is red). Natural sh the way we perceive colors. Instead of trying to mat pay attention to the color temperature. Does the sun yellow or orange glow over the subject, or do you see purples in the shadow areas? These sorts of color shift ignored in field guide art but are an important part the field. Look for and respect color changes and you like it is integrated into its environment. Observe ho in light and shade, at different times of the day, and l or overcast skies.



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Change in value indicates a change in the plane of the body.

Shadow area does not reach edge of body because of reflected light.

Lost and found edge

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A painting that uses too many colors may look like a calico patchwork instea
on the color wheel and perhaps use a touch of a color from the opposite side

COLOR TEMPERATURE OVER LOCAL COLOR

Beginning artists often focus on painting the overall or local color (this tree i
cast a “warm” yellow or orange glow over the subject, or do you see “cool” b
color changes and your bird will feel like it is integrated into its environmen

Background purple brought into shadow color

Foreground color brought into body to unify drawing

OBSERVING LIGHT AND SHADOW

Light and shadow describe the form and structure of your subject and give drawings di
But be careful; shadow can also quickly dominate a drawing.

THE CONVENTIONS OF SHADOW AND LIGHT

Light and shadow are handled in predictable ways in most scientific illustrations. Shadows are usually deemphasized so as not t
with plumage patterns. The light source is typically located in the top left-hand side of the drawing. It helps to learn these c
convey light, but do not be trapped by them. Become an observer of light. Note how it changes and diverges from this simp
consistent about how you handle light or shadow. If you bring a warm ochre into one highlight, look for that same warm
highlights. If you add a touch of violet to one shadow, you may also find it in other shadow areas in the painting.

Highlight: Bright, direct light on the surface facing the light source, sharp on a shiny surface, diffuse on a dull surface

Core shadow: Deepening
the side opposite the light
shadow does not reach the
object because of reflected
making the core shadow to
consider using colors other
to create your shadows. If
to look carefully at shadow
discover subtle colors withi

Reflected light: Light that bounces ba
shadow side of an object is not as brigh
highlight and may show the color of th
is reflecting the light.

Cast shadows: Many scientific illustrations do not inc
shadow. If the light source is in the top left corner, the
will fall to the lower right. Shadows of other objects (s
branches) will curve across the bird's rounded body. Th
may help describe the form of the bird but may also be
with plumage patterns.

SPECIAL LIGHTING SITUATIONS

Strong sunlight: Direct sunlight can cause bright highlights and deep shadows. A sunlit back may appear to be brighter than
belly, even if the bird has a white breast and a black back.

Backlighting: A bird that is between you and a bright light source will show a halo of light transmitted and reflected from t
with deep shadows in its core. You may not be able to see the local color.

Overcast skies: Cloudy weather will soften shadows, making it easier to appreciate the patterns and colors of a bird's feathers.

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highlight, look for that same warm glow in other highlights. If you add a tou

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Highlight: Bright, direct light on the surface facing the light source, sharp on

Core shadow: Deepening value on the side opposite the light source. The sha
If you start to look carefully at shadows, you will discover subtle colors with

Reflected light: Light that bounces back onto the shadow side of an object is

Cast shadows: Many scientific illustrations do not include the cast shadow. If
These shadows may help describe the form of the bird but may also be confu

PLANES AND TEXTURE

Just as angles in the silhouette define body shape, changes in shadow values show in planes on the surface of the body. Define these planes first; then add a little te

SHOW PLANES WITH CHANGES IN VALUE

Most objects in nature are not evenly rounded. Do not think of shading as making a smooth blend of shadow tone from a dar to a highlight. These gradual shadows end up over-rounding the subject. Most real objects in nature have angles and planes catch light or that cast shadows with defined edges. Changes in value indicate where planes meet and where the body surface c Changes in value turn a form.

To capture these planes, draw a light line along the edge of the shadow's shape and fill it with tone. Trace a faint line along highlight and fill in the remaining area with a mid-tone (don't let those guidelines show). The trick is that the shadows and defined shapes, not just blended areas of tone. If you try to incorporate too many shades of gray or concentrate on blending will lose track of these planes. Therefore, keep your value scale simple. Rounded forms turn gradually and show gradual value forms turn abruptly and show sharp changes in value.

A LITTLE BIT OF TEXTURE GOES A LONG WAY

The texture of feathers will show most prominently when they are ruffled where the body makes a sharp angle beneath ther shows at the point where the shadow rolls into the highlight. Oblique light in this transition area will highlight the feather overdo it with feather texture. A little bit and your bird has soft feathers. Push it a little further and your bird becomes scru highlights with a white colored pencil and then crisping up the details and adding a hint of texture with a dark brown Compare the last three stages of the illustration below. The results are subtle but effective.

1 Original watercolor
2 Highlights added with a white pencil
3 Final texture, details, and edges with a sharp dark brown pencil

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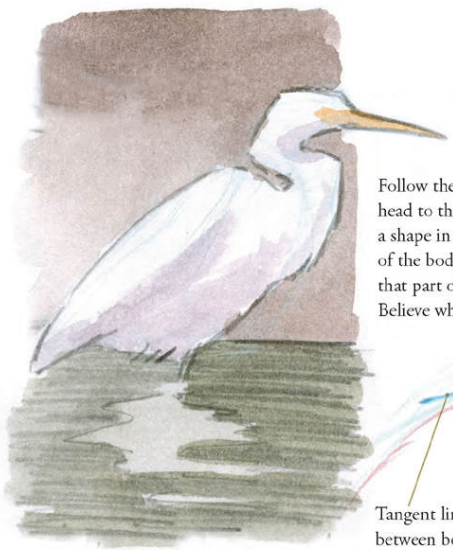
Materials and Techniques 91

1 Original watercolor

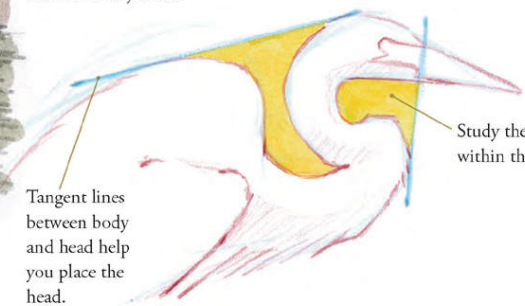
3 Final texture, details, and edges with a sharp dark brown pencil

USING NEGATIVE SPACE

When you focus on a bird, your attention can get lost in the details. Instead of lo
the bird itself, look past it, and study the shape of its background. This will help y
less on the detail and concentrate on the shape.



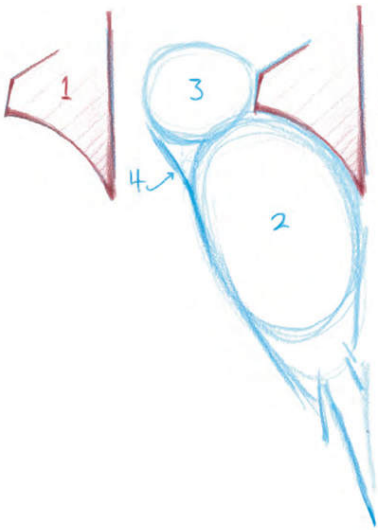
Follow the curve of the back of the head to the back and visualize it as a shape in itself. Ignore the detail of the body and your idea of how that part of the bird "should" look. Believe what you see.



Study the negativ
within the tanger

Tangent lines between body and head help you place the head.

Negative shapes can draw the bird for you. If you see a prominent shape, such as under the throat of a woodpecker, sketch that in first and use it as a guide to place the body and then the head. This first shape helps place and proportion the body masses. You can also superimpose a negative shape onto a sketch that is already in progress. If it fits, it will help define angles and contour. If the negative shape does not fit into your sketch, this is a reliable sign that your proportions or the placement of the body and head masses are wrong. Use negative shapes to check a sketch before adding details. When a negative shape does not fit into your existing sketch, do not ignore it and change the negative shape to fit the drawing. Instead, go back into your drawing and look for the errors in proportion or mass placement. Trust the negative shape and it will steer your drawing in the right direction.



USING NEGATIVE SPACE

When you focus on a bird, your attention can get lost in the details. Instead c

Draw this

Not this

Follow the curve of the back of the head to the back and visualize it as a sha

Study the negative shapes within the tangent lines.

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masses. You can also superimpose a negative shape onto a sketch that is alre
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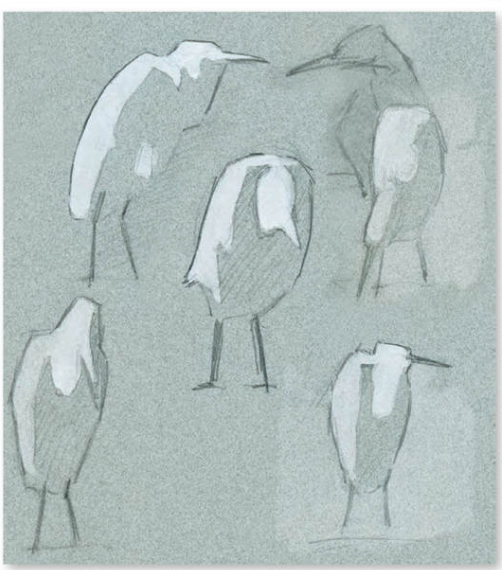
your drawing and look for the errors in proportion or mass placement. Trust

COMBINING SHAPES

Negative shapes can also be useful to define the sections of bird bodies that are
into poses that make them difficult to understand. You can work your way around a
duck by adding one shape at a time.

Look for negative shapes within the body to help you place parts of a complex subject. Look for boundaries where color or value change sharply.



SHADOWS AND HIGHLIGHTS ARE SH

Don't draw shadows as continuous gray zones on
bird that fade as you reach the top of the bird. Direc
sharp changes in body contours create bold highligh
zones that are crisply defined. Shadows are muted
and under the canopy.

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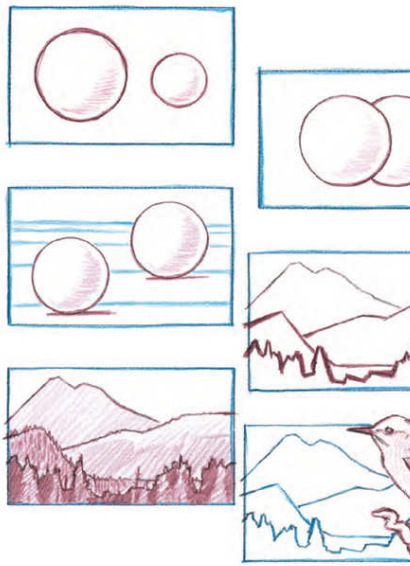
SHADOWS AND HIGHLIGHTS ARE SHAPES TOO

Don’t draw shadows as continuous gray zones on one side of the bird that fa
cloudy days and under the canopy.

HOW TO SHOW DEPTH

Here is your depth tool kit. You do not need to use every technique in every drav
if your illustration looks flat you can use this as a checklist to see how to bring ou
of space.



Size: Objects that are closer to you will look larger than objects of the same size that are further away. A small tree in the foreground can be visually confusing, so if you include it in your drawing, be sure to use some of the other techniques to compensate.

Overlap: Objects that are further away will be partially obscured by objects that are in front of them. Intentionally overlapping objects in a picture will add more depth. Beware of line adjacencies that occur when the edge of a background object lines up with the edge of a foreground object, making them read as one continuous shape. Do not let the edge of a background object intersect a foreground object at the point where the foreground object changes angle.

Height in picture plane: Objects that are higher in the picture plane will appear farther away than objects that are lower in the picture plane if both objects are perceived to be on the ground.

Line: Darker or thicker lines pop forward, while narrow or light lines recede. You can reinforce a foreground line at the point where it overlaps a background object.

Detail: Objects that are closer to you will be more detailed than objects that are further away. If you add too much detail to a background element, you will flatten your picture.

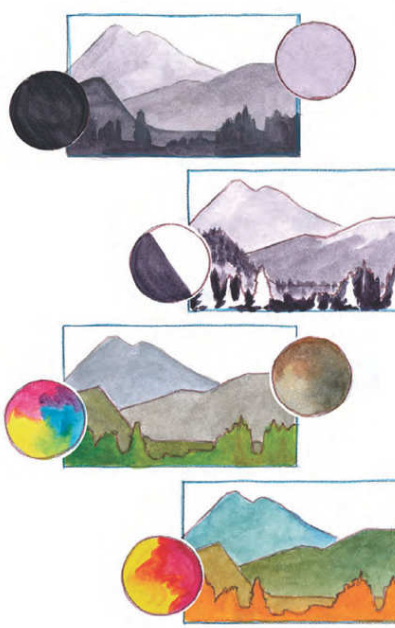
Breaking the picture plane: If part of your subject overlaps the frame of the illustration (breaking the box), it will appear to be in front of all of the objects within the frame.

Value: Objects become increasingly pale as they recede into the distance and are obscured by scattered light in the atmosphere.

Contrast: Objects that are closer to you show a wider range of values (dark to light) than objects that are far from you. The darks are darker and the lights are lighter in foreground elements. Objects in the background are seen through a hazy filter of air that scatters light, making the overall object more pale, and making the light areas less brilliant.

Color purity: Objects closer to the observer will appear in their true colors. Colors observed in the distance will lose their intensity and grade more towards neutral gray or blue-gray (see color temperature).

Color temperature: Blue light scatters preferentially to other wavelengths, subtly shifting the color of distant objects toward blue. Yellow, orange, and red colors fade as you move deeper into the background.



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Distant tree shapes suggested by change in value and color
Detail, contrast, warm colors, and overlap push the bird into the foreground.
Background branches are smaller, have less detail and less contrast, and are a lighter value.
Water drops on close catkins add detail and high contrast.
Compare how foreground and middle-ground catkins are painted. What makes the foreground branch look closer?

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A FEW OF MY FAVORITE THINGS

There is no ideal art kit. Every artist will develop a favorite set of drawing to favorite tools will change over time as you are exposed to new materials and tec

Prismacolor Col-Erase Non-photo Blue pencil: This is my essential tool for sketching the posture, proportions, and angles before I start a detailed drawing. Use it lightly and you will not even need to erase your starting lines.

Mechanical pencils: I use a 0.5 mm pencil for fast sketching. A soft lead makes rich dark lines but is more prone to smudging. I prefer HB or 2B lead. For detail work, switch to a 0.3 mm pencil. You will need to draw more slowly and precisely, but it will give you a consistent, delicate line.

A **water soluble pencil** can be used like a regular pencil, but you can add quick shadows with a damp brush.

You can sketch or add details with a hard-tipped **colored pencil** such as Sanford Verithin or Prismacolor Col-Erase. These pencils do not smudge as much as graphite. Try sketching with a dark brown pencil.

White pencils: These can be used over dry watercolor to add or strengthen highlights. They can also be used before applying watercolor to form a wax barrier that prevents watercolor from adhering to the paper.

A **water-soluble fiber-tipped pen** lays down dark lines that can be blended into shadows with a damp brush. Try a Pilot V Razor Point or Razor Point II for great wash effects.

A dark gray **brush pen** lays down dark tones that can be overlaid to black. Some have a small nib on the other end of the pen for detail work. The ink is water-soluble.

Use a **white gel pen** to add white lines on top of dry watercolor. Useful for plant veins, primary edges, or eye highlights. Once it dries, it can be tinted with a quick watercolor wash or lifted out with a damp brush.

You can lighten your pencil lines by tapping them with a soft **kneaded eraser**. Stretch and pull the kneaded eraser like taffy before using it to warm it up. When it is soft, press it firmly over pencil lines and it will lift the graphite without smearing (like silly putty on newsprint). Use a **soft white vinyl eraser** to remove mistakes. This eraser does a good job of lifting graphite without damaging the paper surface.

Use a rolled paper **blending tool** (tortillon or stump) to smear graphite lines and blend shadows. Once the tip has picked up graphite, you can use it like a gray paintbrush, adding tone to background space, creating subtle shadows or mid-value patterns and texture.

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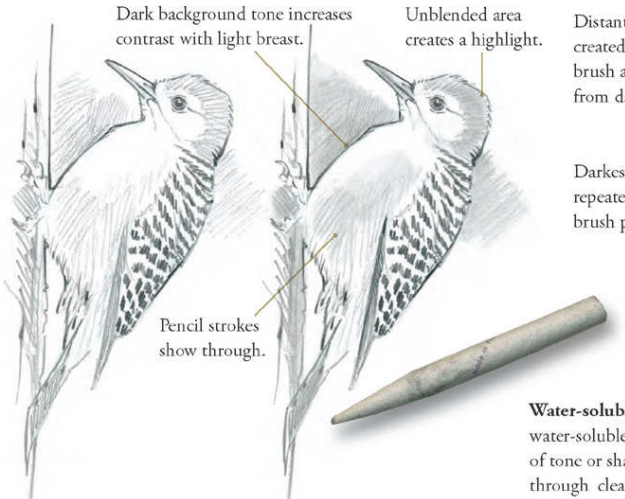
FAST SKETCHING COMBINATIONS

Here are some combinations of tools that quickly produce volume and tone. while making quick studies in the field.

Soft pencil and blending stump: A paper blender or stump quickly adds an area of pale gray tone. Start with a soft pencil drawing. Pick up and blend some of the graphite with the blender. You can essentially paint with the blending tool, adding tone to skies or indicating volume with a shadow in seconds. Do not over-soften the edges of shadowed areas. Objects in nature have angles that give the shadows sharper edges.

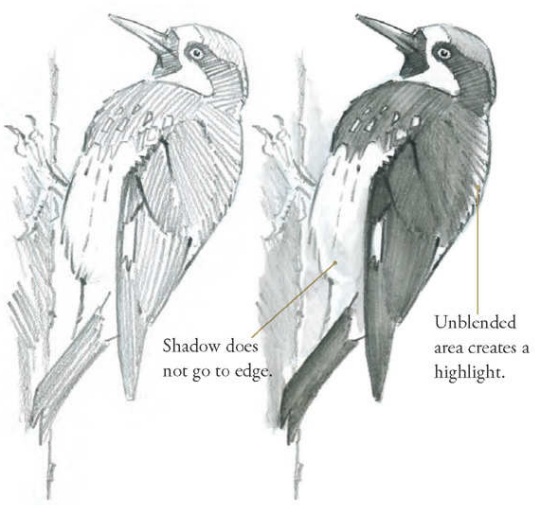

Dark background tone increases contrast with light breast.
Unblended area creates a highlight.
Pencil strokes show through.

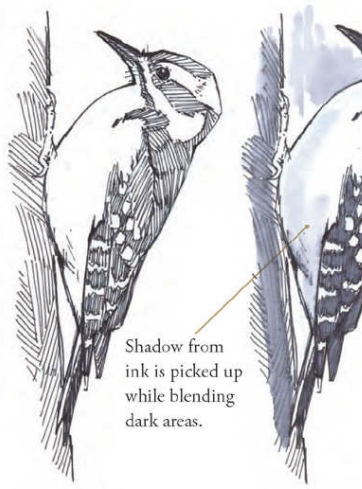
Brush pen: A dark gray brush pen with a fine tip on the other end can quickly lay down dark values, deepen to black, blend with water to soften edges, or create subtle shadows.

Distant trees and tone created with damp brush and ink lifted from dark areas
Darkest areas from repeated strokes of brush pen

Water-soluble pencil and brush: Sketch as you would with a regular pencil, then blend darks and create shadows with a damp brush. Leave some parts as unwetted pencil lines.

Water-soluble pen and brush: If you make your water-soluble pen, you can wet the ink with a brush of tone or shadow. The ink lines will not fully dissolve through clearly. Experiment with different brands pens create brown washes while others dilute to gra Different brands also are soluble to different degrees.





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Distant trees and tone created with damp brush and ink lifted from dark area

Dark background tone increases contrast with light breast.

Unblended area creates a highlight.

Darkest areas from repeated strokes of brush pen

Highlight lifted out with damp brush

Pencil strokes show through.

Shadow does not go to edge.

Water-soluble pen and brush: If you make your sketch with a water-soluble p
pens. Some pens create brown washes while others dilute to gray or blue-gra

Water-soluble pencil and brush: Sketch as you would with a regular pencil, t

Unblended area creates a highlight.

Unblended area creates a highlight.

Shadow from ink is picked up while blending dark areas.

A PORTABLE WATERCOLOR PALETTE

Watercolors are fast-drying and easy to carry, making them ideal for both field ar
work. Carefully organize your palette to simplify color mixing.

Keep separate mixing zones for different color groups. Do not clean these areas between paintings, but mix new colors from them.
Add dabs of other colors at the edges of your mixing space to test new colors or to add to your palette if you run out of space.
If you choose to use Permanent White gouache to tint colors or make colors opaque, keep the paint and mixing area separate so that you do not dull your other colors.
Mix any color here.
Mix any color here.
This
mixi
Avoi
large
mag
This area is for mixing cyan, blue, and violet. Avoid adding large amounts of red, yellow, or orange.
This area is for mixing yellow, orange, red, and magenta. Avoid adding large amounts of cyan or blue.
Put a dollop of Hansa Yel
into the green and brown
and put some Quinacrido
the blue-purple mixing ar
keep your base pigments
In the field I fit part of an old sock around my wrist to use as my cleaning rag. When you wear a hole in a sock, wash it and cut off the toe. It is one less thing to hold as you pursue birds though the foliage with your paint set.
Keep your yellow clean. Put the yellow paint in a corner of your palette and never mix it with a dirty brush.
My favorite brush for both field and studio (used
painting in this book) is the Pentel Aquash Water
the broad (18 mm) tip. It keeps a sharp point, hol
water, and is fitted securely with a cap to protect t
Dirty paint water can contain heavy metals and sh
be dumped in the field. With this system, you do
water bottle to clean your brush. When you want
colors, simply give it a squeeze and wipe the brush

A PORTABLE WATERCOLOR PALETTE

Watercolors are fast-drying and easy to carry, making them ideal for both fie

Keep separate mixing zones for different color groups. Do not clean these are

Add dabs of other colors at the edges of your mixing space to test new colors

This area is for mixing yellow, orange, red, and magenta. Avoid adding large

This area is for mixing cyan, blue, and violet. Avoid adding large amounts of

This area is for mixing green. Avoid adding large amounts of magenta or red

If you choose to use Permanent White gouache to tint colors or make colors

Mix any color here.

Mix any color here.

In the field I fit part of an old sock around my wrist to use as my cleaning ra

Put a dollop of Hansa Yellow Light into the green and brown mixing areas ar

Keep your yellow clean. Put the yellow paint in a corner of your palette and

My favorite brush for both field and studio (used for every painting in this bo
paint water can contain heavy metals and should not be dumped in the field.

PAPER SELECTION

The type of paper you use dramatically changes your results. Pay particular attentio
weight, texture, and acidity. Experiment with different paper types to find one that

1. Fabriano Venezia Sketchbook
2. Canson Basic Sketchbook
3. Komtrak Inspiral Notebook (refillable)

SKETCHBOOKS

Most sketchbooks have light (65 lb.) paper that will warp when you apply water to the page. If you frequently work with wet media, you may prefer a book with heavier paper, such as Fabriano Venezia (90 lb.). You can also take any kind of paper that you like and get it punched to put in a refillable Komtrak sketchbook. I avoid most other spiral-bound books because the pages can rub against each other and smear your pencil work.

Heavyweight paper is less prone to buckling with w
can take much more abuse in the form of erasing,
embossing. If you have never drawn or painted on
you are in for a treat. Try at least 140 lb. paper for mo
or even heavier if you plan to make lots of wet wa
work, my favorite paper for illustration is Strathmore
110 lb. cover bristol, ultimate white, with a "wove" fi
punched for use in my Komtrak journal. Be certain t
is archival or acid free, or else it will yellow and degra

Paper texture is important. Smooth paper (or hot
for pen drawings or hyper-detailed brushwork. For pe
want a little more tooth to the paper to catch the gra
Rough (or cold press) paper can bring out interesti
granulating watercolor washes.

Experiment with drawing on toned paper. You can b
of gray or brown toned paper at an art supply store.
into your sketchbook. I use mid-value colors that a
so that I can both push darks with my pencil and p
colored pencil or gouache. I like the Canson Mi-
Try Oyster 340 (me
Moonstone 426 (wa
Blue 354 (blue gray)
Gray 122 (flat gray).

COLORED PAPER AND WHITE GOUACHE OR PENCIL

Try sketching on toned pastel paper. Start your drawing with a graphite pencil. Push your darks, looking for the shape of the shadow areas. Then pop in the highlights with a white pencil. The color of the paper provides your mid-tones, so leave some parts of the drawing unmarked with either graphite or the white pencil. You also get interesting effects with watercolor, gouache, or colored pencils. Use wet media lightly or the paper will buckle.

PAPER SELECTION

The type of paper you use dramatically changes your results. Pay particular a

Heavyweight paper is less prone to buckling with wet media and can take m
watercolors, or even heavier if you plan to make lots of wet washes. For fiel
journal. Be certain that your paper is archival or acid free, or else it will yell

Paper texture is important. Smooth paper (or hot press) is used for pen draw
textures in granulating watercolor washes.

Experiment with drawing on toned paper. You can buy a few sheets of gray
pull lights with colored pencil or gouache. I like the Canson Mi-Teintes pape

Try Oyster 340 (medium brown), Moonstone 426 (warm gray), Sky Blue 354

1

2

3

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PAINTING ON TONED PAPER

Paint dark areas with layers of transparent watercolor. When this is dry, add th colors and tones with gouache or opaque watercolor.

1 Build the dark areas with layers of transparent watercolor. I generally start with the lightest washes and build to the darkest, letting each layer dry between coats.

2 Colored paper will buckle if you use a lot of wate fewer, more concentrated washes. If your paintin up too pale, try adding a spot of really dark value early the rest of the values to that dark point.

3 Here, I added the yellow with Cadmium Yellow Medium. This semi-opaque watercolor will block the gray from showing through. You could also use yellow gouache for this treatment. Try using transparent washes for the darks and opaque paint for the lights.

4 Paint the white areas with Permanent White gouache.

5 The shadow on the bottom of the bird was created by lifting out some of the Permanent White gouache with a damp brush.

PAINTING ON TONED PAPER

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Build the dark areas with layers of transparent watercolor. I generally start w

1

Colored paper will buckle if you use a lot of water, so I use fewer, more conc

2

3

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This semi-opaque watercolor will block the gray from showing through. You

4

Paint the white areas with Permanent White gouache.

e shadow on the bottom of the bird was created by lifting out some of the Pe

5

1 Another way to start a painting is to create shadows first. I use a dull purple gray.

2 Paint washes of local color on top of the shadows they are dry. You can keep adding layers without running together if you let the washes dry between coa

3 Add darker colors on top of light base-coat washes (work from dark to light). Do not cover the whole bird with paint. Use the color of the paper as one of your hues in the body of the bird.

4 The breast areas are painted with Permanent White gouache. This is an opaque water-based paint. The bright white adds contrast and makes the drawing "pop." Apply long, dry brushstrokes on the lower belly to suggest the longer, fluffy feathers.

1

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COLOR THEORY HERESY

Mixing colors can be frustrating. When you combine red, blue, and yellow as colors, some mixes turn muddy and other colors are impossible to create. The go is, it's not you.

Dull green. Why can't I mix brilliant green?

Ugly, bruise-colored purple: Why can't I mix clean violet?

If you mix a color wheel using fire engine red, navy blue, and ye primary colors, you will find yourself puzzled and disappointed. a good orange by combining the red and the yellow, but you wil to mix a clear violet. You will also notice that the greens are not you expected. Mix and remix as you will, you will keep getting m What is wrong? The error lies in the colors that we think of as pri

By definition, a primary color cannot be made by combining It is "pure." You should be able to mix the other colors by combi colors. It turns out that this is not really true; but three primar actually produce many of the colors that we see. To get started, debunk some color myths. A few color experiments will change look at color forever.

PROBLEM 1: CAN'T GET THERE FROM HERE...

There are colors that you cannot create by combining blue, red, and yellow. Mixing red and blue is supposed to make violet but instead makes a purplish gray. How can you get violet?

Mixing yellow and blue makes a dull green. How do you mix vibrant, clean green hues?

Hot pink is another problem. If you dilute red paint, you get light red, not pink. The same problem results if you add white paint to red using acrylic or oil paint.

PROBLEM 2. YOU CAN MIX RED AND

You should not be able to mix two colors and get a p If you can mix two colors to obtain blue, red, or yello colors are not primary colors. Mixing yellow and magen You can see this with watercolor, opaque paint, or co Therefore, red is not a primary color! Similarly, if you and cyan, you make blue. This means that blue is also color.

Magenta and cyan are not pale versions of red and b distinct colors in themselves. You cannot mix them o colors to create them. Magenta and cyan are in fact the colors, in addition to lemon yellow. If these colors are your palette, you will not be able to mix clean colors.

Why did the green turn dull? Blue is derived from primaries. Adding the remaining primary neutralize color. And purple? Any time you mix red with blue you because you are mixing two derived colors.

COLOR THEORY HERESY

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If you mix a color wheel using fire engine red, navy blue, and yellow as your violet. You will also notice that the greens are not as vibrant as you expected

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It is “pure.” You should be able to mix the other colors by combining primar myths. A few color experiments will change the way you look at color forever

Ugly, bruise-colored purple: Why can’t I mix clean violet?

Dull green. Why can’t I mix brilliant green?

YELLOW

BLUE RED

PROBLEM 1: CAN’T GET THERE FROM HERE…

There are colors that you cannot create by combining blue, red, and yellow.

PROBLEM 2. YOU CAN MIX RED AND BLUE!

You should not be able to mix two colors and get a primary color. If you can or colored pencils. Therefore, red is not a primary color! Similarly, if you mi

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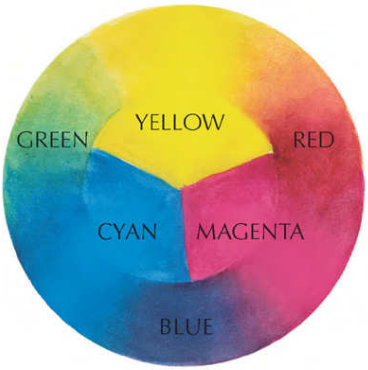
REINVENTING THE WHEEL

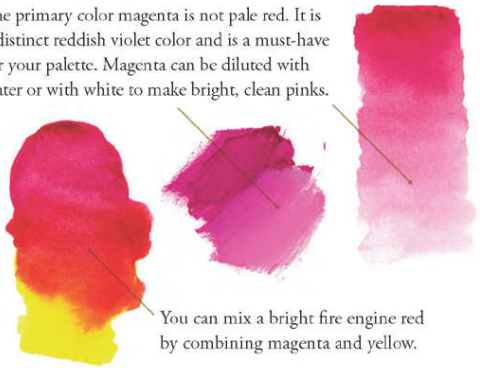
The true primary colors are cyan, magenta, and yellow. These can be mixed to make r and blue. These in turn can be remixed with the primary colors to make violet or ora



I know, I know, this contradicts so much of what you have been told, but to take my word for it. Take your colors out right now and experiment with If you do not have a clear magenta and cyan, add them to your palette t happens when you mix your own color wheel from just the three real prim set of primary colors will be perfect and enable you to really mix all of the but with the triad of cyan, yellow, and magenta, you will be able to create range of colors and avoid mixing muddy ones.

If you use Prismacolor colored pencils, the primaries are Process Red (t to magenta), True Blue (actually cyan, even though it says "blue" in t Canary Yellow. If you use watercolor, Phthalo Blue PB15 (for cyan), Win Quinacridone Magenta PR122 or Daniel Smith Quinacridone Pink PV42 and Daniel Smith Hansa Yellow Light PY3 make a good set of primary co

The primary color magenta is not pale red. It is a distinct reddish violet color and is a must-have for your palette. Magenta can be diluted with water or with white to make bright, clean pinks.



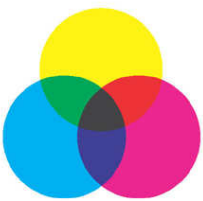
You can mix a bright fire engine red by combining magenta and yellow.

Cyan is another color you need to get comfortable wi not pale blue, and it cannot be mixed from other colo mixed with a touch of magenta, it forms blue, and wi more magenta it becomes a clear, rich violet. Cyan als greens when mixed with yellow.

If you combine all three primary colors, you get a gray, brown, or blackish neutral tone. Depending on the relative amounts of each primary in the mix, you can create an infinite variety of neutral tones. A dark tone that you create by mixing primary colors will result in more variable and therefore more interesting shadows or dark areas than those achieved by simply applying a wash of Lamp Black. A quick way of muting a color that is too bright is to mix it with a little of the color on the opposite side of the color wheel, automatically combining all the primary colors.

A green that is too vivid can be muted with a little magenta.

If cyan, magenta, and yellow are the true primary colo the relationship with the light color wheel also mak Televisions and computer monitors mix beams of red, l light to make all of the colors you see on your screen. colors that result from mixing light are cyan, magenta, a color wheel for light (also called additive color) has the the color wheel for pigment (also called subtractive colo



Pigment Color Wheel
subtractive: all colors=black

Light Color W
additive: all colo

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YELLOW GREEN

RED

CYAN MAGENTA

BLUE

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If cyan, magenta, and yellow are the true primary colors for pigment, the rel
screen. The secondary colors that result from mixing light are cyan, magenta

A green that is too vivid can be muted with a little magenta.

Pigment Color Wheel subtractive: all colors = black

Light Color Wheel additive: all colors = white

USING COLORED PENCILS

Colored pencils are great for the field or studio. They are intuitive to use, predictable, and easy to master. Here are a few pointers that will help you get the results you w

Color selection: You do not need every color in the jumbo box, especially if you are sketching in the field. Select a set of including Process Red, True Blue, and Canary Yellow, and then add a few muddy grays, greens, and browns. These muted colors become your favorites. I also recommend Black Grape and Greyed Lavender, two muted purple-gray pencils that make effecti

Embossing tool: This is a metal stylus with rounded p large and one small. It is used to create grooves in the pap too deep to be marked by colored pencils, and for making lines against a dark background.

Colorless blender: This pencil contains pigment. Use it to burnish the surface filling in all of the little white flecks from paper. This creates a smooth look. Onc burnished, it will be difficult to add laye pencils. If you choose to blend with this be the final step in your drawing.

Pencil organization: Bundle your cool colors, browns and neutrals, and greens s elastic bands to make it easier to grab want. This is a lot simpler than putting short pencils back into their original box

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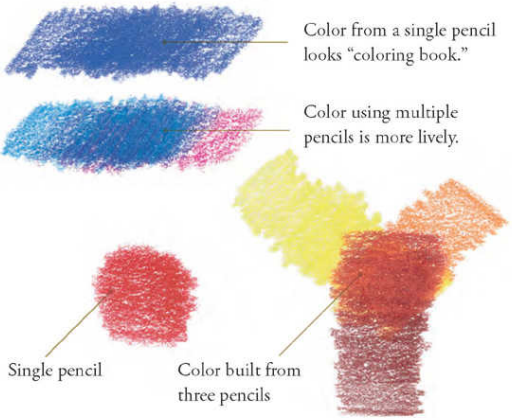
Colorless blender: This pencil contains wax but no pigment. Use it to burnish
from other pencils. If you choose to blend with this tool, it should be the fina

Pencil organization: Bundle your cool colors, warm colors, browns and neutr
box.

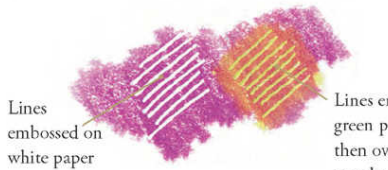
Layering colors: The most important trick for using colored pencils is to press lightly and layer multiple colors together. Do not simply grab the closest color from your set and fill in with it. You can get an infinite variety of hues by layering colors on top of each other. As long as you do not press too hard and flatten the texture out of the paper, you can always add more color. Your dark areas can sparkle with subtle color instead of a monochromatic black. It helps to keep your pencils sharp.


Color from a single pencil looks "coloring book."
Color using multiple pencils is more lively.
Single pencil
Color built from three pencils

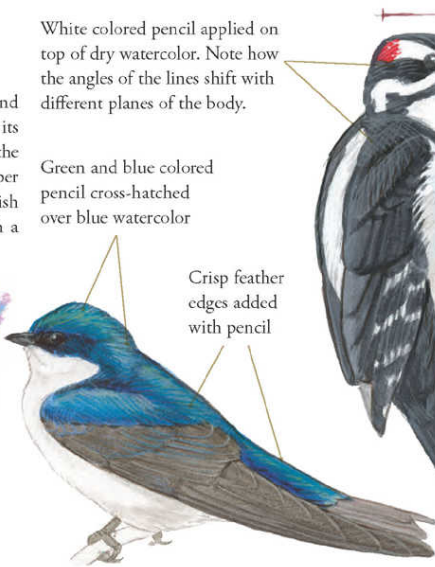
Burnishing the paper: You can build up light layers of color and still have white paper showing. As long as your paper maintains its texture, you can add more layers of color. Many illustrators like the brightness and texture that come from the white flecks of paper sparkling through. If you want to get rid of the white flecks, finish with a heavier layer of color, or burnish the paper smooth with a white pencil or a colorless blender.

Lighten up on the graphite: If you color your drawing with colored pencils, do not use a lot of graphite details or shading. Graphite will smear when you rub it with colored pencils. Instead, add your details and subtle shadows with a colored pencil.

Embossing the paper: If you want a pale line in th dark area, draw it first with enough pressure to mak the paper. As you add other pencil colors around it, i difficult for the other colors to draw in the groove. I edged light lines, use an embossing tool to make fine paper. These lines cannot be erased, so place them car



Using colored pencils with watercolor: You can add details over dry watercolor washes. This is a great w texture iridescence or fine details. Colored pencils watercolor wash will make a waxy layer, making it d watercolor to stick to the paper. Try lightly edging pu with pencil before applying a darker wash to get fine p restraint. Once it is on the paper, the pencil is difficul


White colored pencil applied on top of dry watercolor. Note how the angles of the lines shift with different planes of the body.
Green and blue colored pencil cross-hatched over blue watercolor
Crisp feather edges added with pencil

Show planes with pencil strokes: If a water drop wet the surface of the object that you are drawing, the ar would change as it rolled from one angled surface to strokes that follow the angles of planes in a similar wa the shape of your subject. By changing the angle of your you can indicate changes in the planes of the surface of your pencil strokes show through, let these lines work f

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Color from a single pencil looks “coloring book.”

Lines embossed on white paper

Lines embossed on green pencil strokes, then overlaid with purple

Color using multiple pencils is more lively.

Single pencil Color built from three pencils

White colored pencil applied on top of dry watercolor. Note how the angles

Crisp feather edges added with pencil

Green and blue colored pencil cross-hatched over blue watercolor

Burnishing the paper: You can build up light layers of color and still have wh
flecks of paper sparkling through. If you want to get rid of the white flecks, f

Light application, shows paper texture Burnished pencil, smooth texture

Overworked, blotchy

Show planes with pencil strokes: If a water drop were to run down the surfac
similar way help describe the shape of your subject. By changing the angle o

Blended with white pencil. Note pastel appearance.

Blended with colorless blender. Note value and color shift.

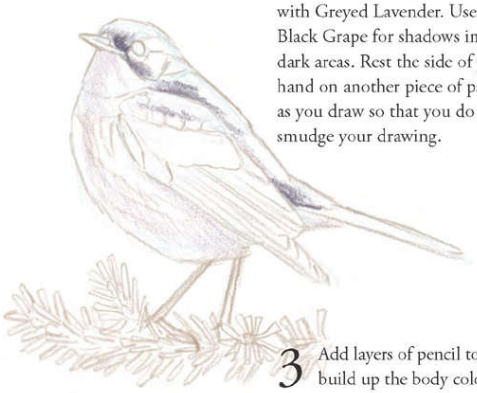
Lighten up on the graphite: If you color your drawing with colored pencils, d

Using colored pencils with watercolor: You can add colored pencil details ov
difficult for the watercolor to stick to the paper. Try lightly edging primary f

STEP BY STEP: COLORED PENCIL WARBLER

If you want a subtle shadow on a yellow subject, try shading with Prismacolor Blac and Greyed Lavender.

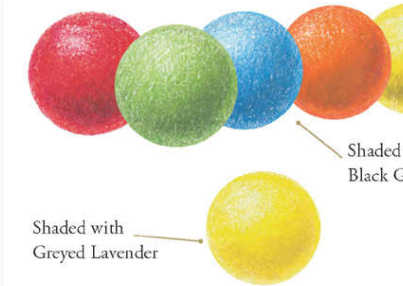
1 Outline with brown pencil. The soft neutral tone will blend easily with other colors and not muddy the yellow. Graphite pencil and black colored pencils will both smudge into the yellow.



2 Create shadows on the throat, breast, and belly with Greyed Lavender. Use Black Grape for shadows in the dark areas. Rest the side of your hand on another piece of paper as you draw so that you do not smudge your drawing.

3 Add layers of pencil to build up the body colors. Leave the back lighter to suggest a highlight. Do not add the black stripes until the end. Once it is down, it will become difficult to intensify the breast color without smudging the black.

Verithin pencils used to create sharp details



Black grape is a good pencil color for many shadows. A in the areas that will receive dark shadows. But the sl with a Black Grape pencil are often too pronounce objects; Greyed Lavender creates terrific shadows or white objects. Note that real shadows often contain h reflected from nearby objects. You can warm, cool, or c shadows as you desire. Learn to look for the colors wit

4 Once you are satisfied with the intensity of the breast feathers and shadow, add the black stripes wit pressure and intensity. I usually create blacks by overlapping colors (often indigo blue and dark brown). On the breast stripes I only used a black pencil because I did not want to risk smudging or a greenish tint where the indigo pencil might overlap the yellow

STEP BY STEP: COLORED PENCIL WARBLER

If you want a subtle shadow on a yellow subject, try shading with Prismacol

1 Outline with brown pencil. The soft neutral tone will blend easily with oth

Shaded with Black Grape

Shaded with Greyed Lavender

2

Create shadows on the throat, breast, and belly with Greyed Lavender. Use B

Black grape is a good pencil color for many shadows. Apply it gently in the a
yellow and white objects. Note that real shadows often contain hints of colo

Crisp up the edges with a sharp Verithin pencil.

Keep pencils sharp, both to control detail and to allow you to push saturated

3

Add layers of pencil to build up the body colors.

Leave the back lighter to suggest a highlight. Do not add the black stripes un

4 Once you are satisfied with the intensity of the breast feathers and shadow
pencil because I did not want to risk smudging or a greenish tint where the i

Verithin pencils used to create sharp details

STEP BY STEP: MIXED-MEDIA STELLER'S JAY

Take advantage of the rich colors of watercolor in combination with the prec
texture of colored pencil. By combining media, you get the best of both worlds.

1 Block in the posture, proportions, and angles with a Non-photo Blue pencil.

Keep the guidelines light (these lines are overemphasized to make them easy to see).

2 Outline the feather groups and wings with graphite pencil. The harshness of these edges will fade when covered with paint.

3 Add texture with graphite pencil, following the contours of the bird.

Exclude detail from highlight areas.

4 Lay in shadows with DS Shadow Violet watercolor. Shadows give the bird volume and dimension.

How will the cast shadow of the head and wing wrap around the body?

5 Let the shadows dry and glaze layers of color. Look for subtle color shifts.

Cyan wings (Phthalo Blue)

Violet in tail

Drybrush the tail and wing markings before adding pencil.

6 Add colored pencil once the watercolor has dried completely.

Follow the contour of the body with pencil strokes.

Suggest fluffy breast feathers with longer overlapping strokes.

Indicate some feather white highlight. Do n

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Cyan wings

(Phthalo Blue)

Violet in tail

Suggest fluffy breast feathers with longer overlapping strokes.

Indicate some feather edges with a white highlight. Do not overdo it.

WATERCOLOR CHOICES

I look for colors that do not fade in the sun (very important), are nonstaining, transparent. I also prefer colors that contain a single pigment rather than prepared

The choices you make to fill your palette will change over time as you discover new colors. As you add to or delete from your palette, consider paint quality, lightfastness, staining, granulation, transparency, and single pigments vs. mixtures.

Not all watercolors are created equal. Use high-quality paints from the beginning and you will make your work much easier. Low-quality paint will respond unpredictably and will make it more difficult to achieve intense colors or deep values. I use paints manufactured by Daniel Smith (DS) and some artist-grade Winsor & Newton (WN). Each pigment has an alphanumeric code that you can use to help you keep track of similar pigments made by different manufacturers or understand the ingredients of mixes.

Just as a photograph or couch fades in the sun, so do watercolors. Some colors fade more easily than others and should be avoided. Start your color selection by eliminating all such "fugitive" colors. For this reason I avoid Alizarin Crimson, Rose Madder Genuine, Opera Pink, and Aureolin (Cobalt Yellow). Do your own lightfastness test by painting strips of all your colors and cutting the page in half. Put one side in a dark drawer for three months while the other half hangs in a sunlit window. Compare the colors after three months. If you can detect a change in color, either lightening or darkening, look for a new pigment.

Some colors stain the paper and cannot be lifted out. Others sit as granules on the top of the paper surface and can be lifted out with a damp brush. This makes it possible to correct mistakes or add whites back into a painting. I prefer nonstaining colors as a rule, but often I need to incorporate staining colors to get a better range. Paints may contain heavy particles that concentrate into patterns on rough paper as the paint dries. This is called granulation, and it can create beautiful and surprising effects. If you like (often pleasant) surprises, you will like granulating paint. Wherever possible, I use transparent watercolors, which allow me to layer coats of paint and maintain the brilliance of watercolor.

Some artists prefer to limit their palette to a few primary colors and then mix the rest of their colors. This is excellent training in mixing colors. I prefer to take advantage of the array of colors created by grinding chemicals or earth materials into paint. I can combine these single pigments to mix the rest of my colors. This is neither "cheating" nor taking a shortcut, but taking full advantage of the characteristics of different pigments. Paint suppliers also sell their own mixes of multiple pigments. These are less useful for mixing, but often convenient. If your palette is limited, focus on single pigment colors rather than pre-made mixes.

Neutral Tint WN PBk6 PB15 PV19
This opaque, staining black mix can be used to tone down any color or build up deep black areas.

Payne's Grey DS PB29 PBk9 PY42
A low-staining, semitransparent, cool blue-black mix. Do not use it to create shadows on yellow, as it turns green.

Black Tourmaline Genuine DS
Nonstaining, transparent, warm gray (similar to Davy's Gray WN, but lightfast).

Shadow Violet DS PO73 PB29 PG18
A low-staining, transparent, purple blue-black mix. This granulating pigment can dry in surprising and beautiful ways. My go-to shadow color.

Bloodstone Genuine DS
A nonstaining, transparent purplish brown that dilutes to a warm gray.

Raw Umber DS PBr7
Low-staining, semitransparent, deep cool brown

Burnt Umber DS PBr7
Low-staining, semitransparent, warm brown

Italian Burnt Sienna DS PBr7
Nonstaining, semitransparent red-brown

Monte Amiata Natural Sienna DS, PBr7
Low-staining, transparent, warm light brown

Buff Titanium DS PW6:1
Nonstaining, semitransparent pale tan. One of my favorite colors to paint lighter areas of brown birds.

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Perylene Green DS PBk31
Medium staining, semitransparent, rich dark green can be used to mix rich blacks.

Undersea Green DS PB29 PO49
Medium-staining, semitransparent, intense, dull green–brown mix. Fades to soft olive drab.

Hooker's Green DS PG36 PY3 PO49
A low-staining, semitransparent green mix that is a good start for mixing other greens.

Chromium Oxide DS PG17
Low-staining, opaque olive-green, good for sage and greenish warblers

Serpentine Genuine DS
Nonstaining, semitransparent, warm, granulating green

Rich Green Gold DS PY129
Low-staining, transparent yellow-green that is good for mixing with other greens

Phthalo Yellow Green DS PY3 PG36
Medium-staining, transparent, intense yellow-green mix. The yellow becomes more apparent as the pigment is diluted.

Phthalo Blue DS PB15
Strongly staining, transparent primary cyan. Be careful, a little goes a very long way.

Manganese Blue Hue DS PB15
Low-staining, transparent substitute for Phthalo Blue that is less intense and lifts out cleanly

Cobalt Blue WN PB28
Low-staining, transparent blue

Indanthrone Blue DS PB60
Medium-staining, transparent, warm dark blue that appears almost black when applied in a concentrated wash.

Winsor (dioxazine) Violet WN PV23
Medium-staining, semitransparent purple. This formulation stains less than Dioxazine Violet DS.

Quinacridone Pink DS PV42
Low-staining, transparent primary magenta. Also consider Quinacridone Magenta WN PR122, which is closer in hue to pure magenta but more staining.

Pyrrol Red DS PR254
Medium-staining, semitransparent, intense fire engine red

Quinacridone Sienna DS PO49 PR209
Low-staining, transparent orange-brown

Permanent Orange DS PO62
Low-staining, transparent, rich orange.

Quinacridone Gold DS PO49
Low-staining, transparent yellowish brown pigment that dilutes to a soft gold

New Gamboge DS PY153
Low-staining, transparent yellow that changes from brownish to a warm yellow in transparent mixtures

Hansa Yellow Medium DS PY97
Low-staining, transparent yellow

Hansa Yellow Light DS PY3
Low-staining, transparent lemon yellow. Use as the primary yellow for mixing.

Toxic Paint: Some pigments contain toxic heavy me compounds such as cadmium, chromium, copper, co Do not clean or point your brushes in your mouth paint water out in the field. Using a water brush a excess paint residue on a rag is an environmentally f paint in nature.

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WATERCOLOR TECHNIQUES

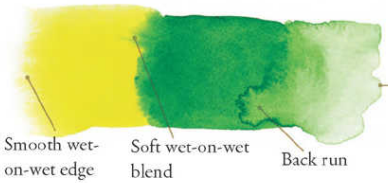
Here is a handful of watercolor techniques that you should get under your belt these to learn and to understand how your materials work.

Flat wash: This technique is used to form a solid area of one color that does not have streaks. Mix a of pool your chosen color large enough so that you will not need to remix during the wash. Tilt your paper down towards you at a slight angle. Apply a wet brushstroke along the top of the wash area with enough water so that the pigment and water form a wet bead along the bottom of the wash. Recharge the brush with paint and make successive strokes below the initial stroke, picking up the bead at the bottom of the wash each time with the tip of the brush. The wet bead will prevent lines from forming at the edges of the strokes where the paint dries. Let the wash dry completely. Do not go back in and mess with the wash once it is down. Flat washes are more difficult to paint with a water brush.

Graded wash: Used to create a wash that changes color or value as it moves down the page. Follow the procedure for the flat wash, but add a little water to the mixture with each stroke. If you use a water brush, just let the pigment run out as you paint back and forth across the paper in one continuous stroke. An easy way to get one color to blend into another is to paint one graded wash, let it dry completely, and then do a second wash of another color in the opposite direction. Make the second wash quickly so that you do not lift or disturb the paint that is already on the surface.

Glazing: You can layer washes on top of coats of dry paint. Applying paint on a dry wash will allow you to create or preserve detailed brushstrokes or build up color or value. Let each layer dry completely between coats. If your paint layers are applied quickly and without scrubbing brushstrokes, the bottom layers will not lift and mix with the upper layers.

Wet-on-wet: If you apply paint to paper that is alread will create soft edges as the pigment creeps out into w can be done into a wash that is still wet or on clean w have applied to the surface. Experiment with differen water on the page. Be careful. If you apply a diluted an area of more dense pigment, the watery paint will r dense area, creating a "back run," pushing pigment that as it dries.

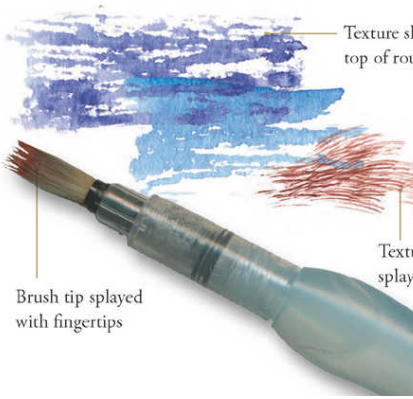


Lifting out: Some colors sit on the surface of the pap rewetted and lifted out with a soft rag or damp brush. T highlights where light strikes your subject. If you wa to be pure white, be sure to leave that part of the pape You will not be able to lift everything completely ou pigments, such as phthalos, stain the paper and cannot

Manganese Blue Hue is easily lifted out.

Phthalo Blue stains t and cannot be lifted

Drybrush: You can create texture by skimming a da brush lightly over rough-surfaced paper. You can also fa damp brush to make strokes that suggest hair or feathe easy to overdo it with this technique, so suggest texture rather than covering a whole bird with drybrush textur



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Drybrush: You can create texture by skimming a damp (not wet) brush lightl
texture in a few areas rather than covering a whole bird with drybrush textu

Wet-on-wet: If you apply paint to paper that is already damp, you will create
different amounts of water on the page. Be careful. If you apply a diluted mi

Smooth wet-on-wet edge

Sharp-edged wash on dry paper

Soft wet-on-wet blend Back run

Lifting out: Some colors sit on the surface of the paper and can be rewetted a
paper untouched. You will not be able to lift everything completely out, and

Manganese Blue Hue is easily lifted out.

Phthalo Blue stains the paper and cannot be lifted out.

Texture from splayed brush tip

Texture skimming the top of rough paper

Brush tip splayed with fingertips

Paint light to dark but establish a dark point: You can always make a watercolor darker by adding more paint. It is more difficult to lighten an area (see "lifting out"). Any area you want to be bright white should be left as clean paper. Start with your lightest areas and build up to the darkest. If you find that your finished watercolors end up too light (which is a common problem), paint one of your darkest spots early in the process. This will force you to adjust the values of the whole painting to that dark point.

A dark background makes a lighter subject pop from the page.
Note the pale area on the back, providing a highlight and contrast with the dark background.

Fewer washes are better than many: Many paper sur to fray or felt up as they are scrubbed with multiple This will make the pigment applied in these areas Minimize the amount of stroking or scrubbing while any given area. Once you have destroyed the surface washes will become unpredictable and blotchy. With paper, explore the balance between working an area an the paper surface.

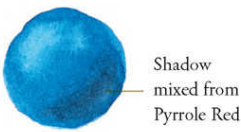
Know when to stop: This is the most difficult aspect you start to apply watercolor, your work grows and de of your eyes. Every stroke brings you closer to represen want to show. Then, at some point, the painting tu and becomes overworked and loses its freshness. Stop think the painting is done. Leave a little to the imagin

MIXING COMPLEMENTARY COLORS

Complementary colors are pairs of colors located roughly on opposite sides of wheel. When mixed, they result in a gray neutral tone that is useful for making sh for dulling a color that is too intense.

Quinacridone Pink and Perylene Green

Phthalo Blue and Pyrrole Red



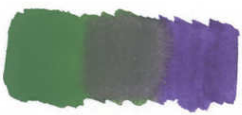
It is very difficult to find a good complementary co with yellow. Anything that is a little too blue will shadow into an ill shade of green. Blacks straight out overpower a delicate yellow. Try mixing a pale purple light touch. I use Neutral Tint WN and Shadow Viol

Shadow mixed f Tint and Shadow

Experiment with color combinations on your palette to discover which colors make the best blacks and grays. Black colors t mixing colors look more interesting in a painting than Lamp Black (which is just soot) or other blacks straight out of the tub

French Ultramarine and Raw Umber

French Ultramarine and Quinacridone Sienna



Chromium Oxide and Dioxazine Violet

Hooker's Green Dioxazine Viole

Paint light to dark but establish a dark point: You can always make a waterc
lightest areas and build up to the darkest. If you find that your finished wate
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Scar from overworked paper

Fewer washes are better than many: Many paper surfaces will start to fray o
lifting out in any given area. Once you have destroyed the surface of the pap

Know when to stop: This is the most di" cult aspect of painting. As you start
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It is very di" cult to find a good complementary color for mixing with yellow
gray but use a light touch. I use Neutral Tint WN and Shadow Violet DS.

Shadow mixed from Neutral

Tint and Shadow Violet

Quinacridone Pink and Perylene Green

Phthalo Blue and Pyrrole Red

Many colors, like Payne's Grey, turn greenish when used as a shadow color o

Shadow mixed from Perylene Green

Shadow mixed from Pyrrole Red

Experiment with color combinations on your palette to discover which colors
of the tube.

French Ultramarine and Raw Umber French Ultramarine and Quinacridone S

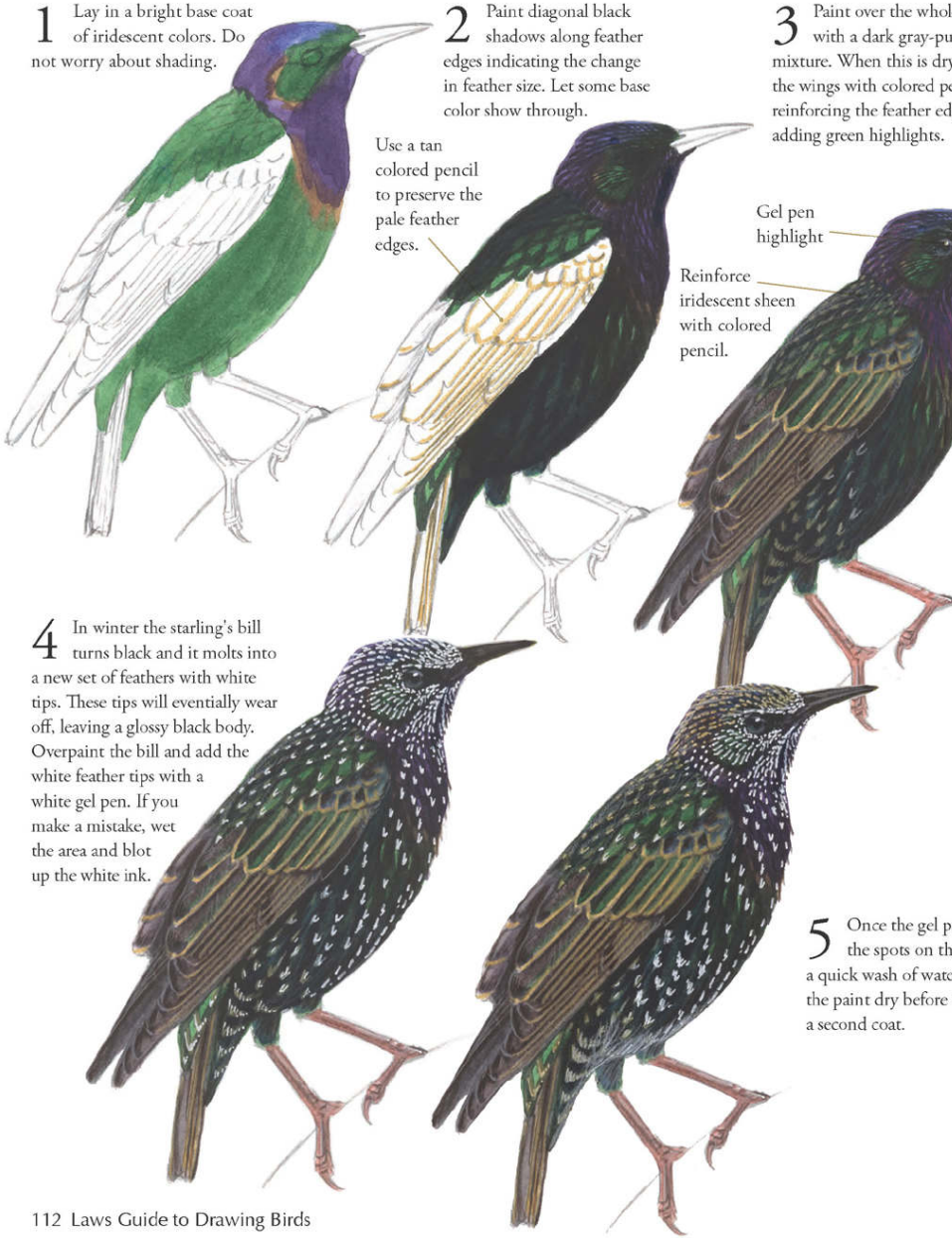
Chromium Oxide and

Dioxazine Violet

Hooker's Green and Dioxazine Violet

STEP BY STEP: MIXED-MEDIA EUROPEAN STARLI

It is difficult to work around small pale spots. Here I use waxy colored pencils paint from darkening the paper and a white gel pen to create sharp details.


1 Lay in a bright base coat of iridescent colors. Do not worry about shading.
2 Paint diagonal black shadows along feather edges indicating the change in feather size. Let some base color show through.
3 Paint over the whol with a dark gray-pu mixture. When this is dr the wings with colored pe reinforcing the feather ed adding green highlights.
Use a tan colored pencil to preserve the pale feather edges.
Gel pen highlight
Reinforce iridescent sheen with colored pencil.
4 In winter the starling's bill turns black and it molts into a new set of feathers with white tips. These tips will eventially wear off, leaving a glossy black body. Overpaint the bill and add the white feather tips with a white gel pen. If you make a mistake, wet the area and blot up the white ink.
5 Once the gel p the spots on th a quick wash of wat the paint dry before a second coat.

STEP BY STEP: MIXED-MEDIA EUROPEAN STARLING

It is difficult to work around small pale spots. Here I use waxy colored pencil

Lay in a bright base coat of iridescent colors. Do not worry about shading.

1

Paint diagonal black shadows along feather edges indicating the change in fe

2

3

Paint over the whole wing with a dark gray-purple mixture. When this is dry

Gel pen highlight

Reinforce iridescent sheen with colored pencil.

4

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off, leaving a glossy black body. Overpaint the bill and add the white feather

Use a tan colored pencil to preserve the pale feather edges.

5

Once the gel pen is dry, tint the spots on the head with a quick wash of wate

USING REFERENCE MATERIAL

Science museum collections, taxidermy mounts, video, and photos are useful sources and can supplement your field observations.

DRAWING FROM MUSEUM COLLECTIONS

Scientific bird collections are an invaluable resource. Specimens, along with essential collection information, such as the location and date that the skin was collected, are carefully preserved and catalogued. Researchers can quickly get the sense of genetic and regional variation by examining drawers full of prepared skins. The skins are stuffed and dried to preserve space, but they still show essential morphological details. While feathers are easily observed, the birds are not in lifelike poses, but instead resemble corn dogs with white cotton showing through the eyes.

These collections will preserve birds for hundreds of years and the value of these biological libraries only grows with time. Access is limited to those who can demonstrate a legitimate need to see the collections and who can also demonstrate proper care and handling of the specimens. If you are permitted to access a research collection, work carefully with the curators to learn and follow their procedures. Consider volunteering at a local museum to help prepare specimens. There is no better way to learn external anatomy.

DRAWING FROM MOUNTED BIRDS

Taxidermy is a difficult art. Many mounted birds a distorted. If you copy a stuffed bird's posture, your dra be as good as the taxidermy and will show all the subje poor mounts can be used as study skins to check feath bills, and legs may be painted and do not show the sam on a living bird. Another disadvantage of drawing from is that the collection information, such as where and was killed or found, is seldom kept with the mount. Th your drawing the incorrect subspecies or plumage. If y work of a master taxidermist, make sketches of one bird angles in order to learn how to rotate a bird in your mi

DRAWING FROM PHOTOGRAPHS AN

Photographs and video are a terrific resource for il popularity of digital photography has resulted in rich resources. You can also freeze high-definition video to c any pose. Some caution is warranted, however. Many like to catch unusual behaviors or actions, so a phot representative of the typical posture or plumage of a bi contrast in many photos is much stronger than what yo naked eye, so copying the values of a photograph may r appear unnatural. Color photographs in magazines oversaturated and may distort color.

Illustrators should respect the copyrights of other ar you use a photograph or a drawing for reference, be re copyright and intellectual property of the photographer laws apply whether or not there is a copyright notice acc photograph. You can combine elements of different refe to make a unique work that is not obviously derivative. unethical to copy another person's work (including p you intend to show, sell, or use the art in a publicatio requesting the permission of the photographer or artist

DRAWING FROM OTHER ILLUSTRATIO

It is inspiring to study and learn from the work o There is a long tradition of studying the masters. If y or illustrators that you particularly admire, find re their work and try to copy the drawings line by line. yourself volumes about how that artist works. I find helpful to study sketches or unfinished work, where the drawing is easier to decipher. Drawings can be misle material. Any mistake made by the original artist will to your own work. Copyright laws apply to artwork ju photographs.

USING REFERENCE MATERIAL

Science museum collections, taxidermy mounts, video, and photos are useful

DRAWING FROM MOUNTED BIRDS

Taxidermy is a difficult art. Many mounted birds are lumpy and distorted. If
check feather detail. Eyes, bills, and legs may be painted and do not show th
found, is seldom kept with the mount. This may result in your drawing the i
mind.

DRAWING FROM PHOTOGRAPHS AND VIDEO

Photographs and video are a terrific resource for illustrators. The popularity
Many photographers like to catch unusual behaviors or actions, so a photo m
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Illustrators should respect the copyrights of other artists. Any time you use a
copyright notice accompanying the photograph. You can combine elements o
intend to show, sell, or use the art in a publication without first requesting th

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BIBLIOGRAPHY

Here are some of the most helpful and inspiring articles and books I have foun
to improve your understanding of bird anatomy and learn from the styles of othe
Follow the work of your favorite artists and glean used bookstores for dusty treasu

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LIST OF ILLUSTRATIONS

Birds are identified clockwise from top left, unless otherwise stated.

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Title page: American Robin, Allen's Hummingbird, Loggerhead Shrike, Red-tailed Hawk, Yellow-rumped Warbler, Belted Kingfisher

ii Song Sparrow

iii Olive-sided Flycatcher, Tufted Titmouse, Red-bellied Woodpecker, Northern Cardinal, Eastern Pheobe, Brown Thrasher, Black-capped Chickadee, Chimney Swift

iv White-throated Sparrow

v Yellow-rumped Warbler, White-crowned Sparrow, White-throated Sparrow

vi Song Sparrow, House Finch, Black-and-white Warbler, White-throated Sparrow, Song Sparrow

viii Dark-Eyed Junco

x Townsend's Warbler, Malachite Kingfisher, Bald Eagle, Northern Cardinal

1 Loggerhead Shrike, Song Sparrow, House Wren

3 Bohemian Waxwing

4 Northern Cardinal

5 Scrub Jay, Savannah Sparrow, House Wren

6 American Robin, Song Sparrow, Hermit Thrush

7 Pileated Woodpecker, Wrentit, Yellow-billed Magpie

8 Loggerhead Shrike, Mountain Chickadee, Yellow-billed Magpie, Loggerhead Shrike

9 Marbled Godwit, Golden Eagle, Redhead

10 Townsend's Warbler

11 Townsend's Warbler

12 Song Sparrow

13 Song Sparrow

14 Yellow-rumped Warbler, Song Sparrow, Blue Grosbeak

15 Song Sparrow, Acorn Woodpecker, American Robin, Chestnut-sided Warbler,

16 Acorn Woodpecker, Bewick's Wren, Spotted Towhee, White-throated Sparrow, Yellow Warbler, Chestnut-sided Warbler

17 Spotted Towhee, Yellow Warbler, American Dipper, Military Macaw, American Woodcock, Golden-cheeked Warbler

18 Top: Song Sparrow

Bottom row, left group (clockwise from top): Golden-winged Warbler, Blue-headed Vireo, Olive Warbler

Middle group: Smith's Longspur, Savannah Sparrow, Green-tailed Towhee

Right group: Magnolia Warbler, White-throated Sparrow, Kentucky Warbler

19 Townsend's Warbler, Song Sparrow, American Pipit

20 Black-throated Gray Warbler

21 White-throated Sparrow, Yellow-rumped Warbler

22 Song Sparrow

23 Song Sparrow, Hooded Warbler

24 Yellow-rumped Warbler, Song Sparrow, American

25 Yellow-rumped Warbler, White-crowned Sparrow, Savannah Sparrow

26 Yellow-rumped Warbler, White-crowned Sparrow

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28 Calliope Hummingbird, Rock Pigeon, Laysan Alb

30 Hermit Thrush

31 Blue Grosbeak, American Kestrel, Broad-winged H Tree Swallow, Peregrine Falcon, Western Wood-pe Grosbeak, Grasshopper Sparrow, American Pipit

35 Song Sparrow, Dark-eyed Junco, White-headed W White-crowned Sparrow, Evening Grosbeak, Stell Tricolored Blackbird

36 Dark-eyed Junco, Northern Flicker, Dark-eyed Ju Swallow, Song Sparrow, Yellow-rumped Warbler

37 Bewick's Wren

38 Hermit Thrush, Greater Roadrunner, Black-necke Common Raven

39 Blue Jay, Song Sparrow, Lawrence's Goldfinch, Co

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Next row: Song Sparrow, White-throated Sparrow rumped Warbler, White-throated Sparrow

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47 Mallard, Great Blue Heron, Great Blue Heron, Re Hawk, Northern Pintail

48 Red-tailed Hawk, American Kestrel, Red-tailed H Eagle, White-tailed Kite, Ferruginous Hawk, Merl

49 Ferruginous Hawk, Great Horned Owl, Merlin

50 American Kestrels, Red-tailed Haw , Gyrfalcon

51 Peregrine Falcon

52 Greater Scaup, Northern Pintail, Barrow's Golden

53 Center of page, left: Ring-necked Duck; others are Scaup

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49 Ferruginous Hawk, Great Horned Owl, Merlin

50 American Kestrels, Red-tailed Haw , Gyrfalcon

51 Peregrine Falcon

52 Greater Scaup, Northern Pintail, Barrow's Goldeneye, Mallard,

53 Center of page, left: Ring-necked Duck; others are Greater Scaup

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55 Top three: Mallard

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56 Mallard, Green-winged Teal; Canada Goose "At rest"

57 Ruddy Duck

58 Greater Yellowlegs, Long-billed Curlew, Lesser Yellowlegs, Snowy Plover, Western Sandpiper, Long-billed Curlew

59 Great Blue Heron, Greater Yellowlegs, Willet, Great Egret

60 Top: Great Blue Heron, Great Egret

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63 Anna's Hummingbird, Rufous Hummingbird (bottom, left)

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65 Red-tailed Hawk, White-tailed Kite (bottom)

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67 Left column, Peregrine Falcons; right column, Red-tailed Hawk

68 Northern Harrier, Great Blue Heron, Red-tailed Hawk, Northern Harrier, Black-billed Magpie

69 Top circle: Red-tailed Hawk

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ABOUT THE AUTHOR

Award-winning naturalist, educator, and artist **John Muir Laws (Jack)** passionately loves nature and celebrates life with curiosity, creativity, and humor. His sketches are informed by careful observation, extensive field experience, and lots of practice.

Jack's connection with nature began with explorations when he was a child, a regular part of family trips. His love of the outdoors and confidence in the wild grew through participating in Scouting. His mother gave him a sketchbook to record his discoveries in, and the world of nature journaling opened up. With the encouragement of his grandmother he drew constantly, and his abilities to observe and to draw grew together.

Jack has taught nature and science education since 1983. He loves teaching and sharing inspiration with others and gives classes, lectures, and field courses, and consults with individuals and organizations. Near his home in the San Francisco Bay Area he leads the Nature Journal Club, offering free monthly workshops and field trips to a vibrant community of artists, explorers, naturalists, and poets. He is a Research and Education Associate of the California Academy of Sciences and a TogetherGreen Conservation Leadership Fellow of the National Audubon Society. He was selected as the artist for International Migratory Bird Day in 2011 and was named one of *Bay Nature*'s 2020 Local Heroes.

Jack writes and illustrates books about the natural history of California and art, including *The Laws Field Guide to the Sierra Nevada* (2007), *The Laws Guide to Drawing Birds* (2012), *Sierra Birds: A Hiker's Guide* (2019), *Sierra Wildflowers: A Hiker's Guide* (2019), and *How To Teach Nature Journaling: Curiosity, Wonder, Attention* (2020, coauthored with Emilie Lygren), and is a regular contributor to *Bay Nature* magazine with his "Naturalist's Notebook" column. For a wealth of nature journaling resources, visit johnmuirlaws.com.

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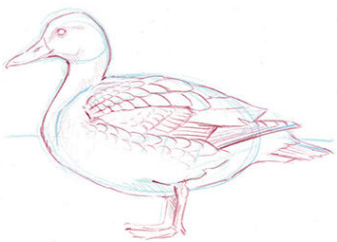
Art Technique/Drawing/Birdwatching

John Muir Laws's guide to drawing birds is itself winged, devoted not only to art but also to the l
and postures of the birds themselves. Here, artistic technique and the exquisite details of nat
intertwine, and drawing becomes the vehicle for seeing. This how-to guide will enhance the s
ous artists, but perhaps more importantly, it will provide guidance for those who believe they
Leading the mind and hand through a series of detailed exercises that have been refined in l
workshops, Laws delivers what he promises—that "drawing birds opens you to the beauty of t

Learn how to:

- **Observe and capture critical proportions of any bird species**
- **Focus on the most important aspects of a bird in a quick field sketch**
- **Draw birds in flight**
- **Develop techniques for using colored pencils and watercolor**
- **Avoid common pitfalls in bird drawing**



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